

**THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO**

**IN RE GOOGLE PLAY STORE
ANTITRUST LITIGATION**

THIS DOCUMENT RELATES TO:

Epic Games, Inc. v. Google LLC et al.
Case No. 3:20-cv-05671-JD

Case No. 3:21-md-02981-JD

Judge: Hon. James Donato

STATEMENT OF MATTHEW GENTZKOW

MAY 2, 2024

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I. INTRODUCTION

1. I was retained by counsel for Google in this matter and filed an Initial Report dated November 18, 2022.¹ I testified at trial on November 28, 2023 on topics related to whether Google’s at-issue conduct (i) created more value for users, developers, OEMs, carriers, and other participants of the Android ecosystem and (ii) blocked competition in a way that destroyed value for consumers.
2. For this statement, I have been retained by counsel for Google to evaluate Epic’s Proposed Permanent Injunction (“Epic’s Proposed Injunction”) and to respond to the economic opinions related to Epic’s Proposed Injunction presented in the statements of Dr. B. Douglas Bernheim (“Bernheim Statement”) and Dr. Steven Tadelis (“Tadelis Statement”) filed on April 11, 2024.²
3. In preparing this statement, I considered the settlement agreement between Google and the State Attorneys General (“States’ Settlement”),³ the trial record, publicly available information and academic literature, and all other materials cited herein.

II. ECONOMIC PRINCIPLES

4. The jury found that Google engaged in anticompetitive conduct in two markets, Android app distribution and Android in-app billing services for digital goods and services transactions, and that Google willfully acquired or maintained monopoly power in these markets. The jury also found that Google entered into three categories of agreements that “unreasonably restrained trade,” including (i) the DDA, (ii) agreements with competitors or potential competitors under Project Hug, and (iii) agreements with OEMs including

¹ See Expert Report of Matthew Gentzkow, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 18, 2022 (“Initial Report”). I also filed a Supplemental Report dated December 7, 2022. See Supplement to Initial Expert Report of Matthew Gentzkow, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, December 7, 2022. Unless stated otherwise, for ease of reference, I adopt the same defined terms in this statement as I did in those reports.

² Epic’s Proposed Permanent Injunction, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD (related to *Epic Games, Inc. v. Google LLC et al.*, 3:20-cv-05671-JD), April 11, 2024; Statement of B. Douglas Bernheim, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD (related to *Epic Games, Inc. v. Google LLC et al.*, 3:20-cv-05671-JD), April 11, 2024; Statement of Steven Tadelis, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD (related to *Epic Games, Inc. v. Google LLC et al.*, 3:20-cv-05671-JD), April 11, 2024.

³ Settlement Agreement and Release, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD (related to *In re Google Play Consumer Antitrust Litigation*, 3:20-cv-05761-JD; and *State of Utah et al. v. Google LLC et al.*, 3:21-cv-05227-JD), December 18, 2023. I understand that the States’ Settlement is contingent on the Court’s approval.

MADAs and RSAs. Finally, the jury found that Google “unlawfully tied the use of the Google Play Store to the use of Google Play Billing.”⁴

5. In evaluating Epic’s Proposed Injunction and Dr. Bernheim’s and Dr. Tadelis’s opinions, I take the jury’s findings, including the definition of the two markets, as given. This should not be taken to imply that I endorse or agree with these findings.
6. Throughout this statement, I use the term “consumers” to refer to users, developers, OEMs, carriers, and other participants of the Android ecosystem.
7. From an economic point of view, the overriding goal of any injunction should be to address the harms to competition identified at trial in a way that will benefit consumers. To achieve that end, any injunction should be guided by the following economic principles, which are broadly accepted by economists and consistent with Dr. Bernheim’s own writings in other contexts, as well as views expressed in Dr. Bernheim’s statement, which are endorsed by Dr. Tadelis.⁵
8. *First*, the injunction should prevent Google from engaging in the conduct that was found at trial to be anticompetitive for a sufficient period of time to restore competition. As I discuss in detail in **Sections III** and **IV** below, I believe the States’ Settlement achieves this objective.
9. *Second*, with the barriers to competition identified at trial removed, prices and other market outcomes should be determined by competitive market forces wherever possible.⁶ Directly regulating prices and product features risks creating inefficiencies that harm consumers.⁷ A fundamental principle of economics is that competitive market forces tend to be the most efficient mechanism for determining market outcomes, and that externally constraining these outcomes risks harming consumers and/or benefitting certain consumer groups at the expense of others.⁸

⁴ Jury Verdict, *In re Google Play Store Antitrust Litigation*, 21-md-02981-JD, December 11, 2023, pp. 5, 7.

⁵ See Tadelis Statement, ¶ 3.

⁶ Bernheim, B. Douglas, and Michael D. Whinston, *Microeconomics*, 2nd Ed., McGraw-Hill Irwin, 2014, at p. 18 (“markets have advantages...market prices coordinate our activities.”). See also Hubbard, R. Glenn, and Anthony P. O’Brien, *Microeconomics*, 7th Ed., Pearson, 2019, at p. 115 (“An important advantage of the market system is that it results in efficient economic outcomes.”).

⁷ Bernheim, B. Douglas, and Michael D. Whinston, *Microeconomics*, 2nd Ed., McGraw-Hill Irwin, 2014, at p. 534 (“Because buyers can’t buy all that they want at the ceiling price, sometimes they take inefficient actions that increase the deadweight loss ... since sellers face excess demand for their products ... [a]s a result, sellers have too little incentive to maintain or enhance the quality of their products.”). See also Hubbard, R. Glenn, and Anthony P. O’Brien, *Microeconomics*, 7th Ed., Pearson, 2019, at p. 136 (“Price floors usually increase producer surplus, decrease consumer surplus, and cause a deadweight loss. Price ceilings usually increase consumer surplus, reduce producer surplus, and cause a deadweight loss. ... some people win, some people lose, and a loss of economic efficiency occurs.”).

⁸ Carlton, Dennis W., and Jeffrey M. Perloff, *Modern Industrial Organization*, 4th Ed., Pearson, 2015, at p. 34

10. *Third*, as Dr. Bernheim and Dr. Tadelis affirm in their statements, the injunction “should also avoid inhibiting Google’s ability to compete on the merits by improving its products or pricing, or by addressing legitimate security concerns.”⁹ Users, developers, OEMs, and carriers all benefit when more firms compete for their business. For example, users benefit when competing app stores strive to offer better features and enhanced security, developers benefit when competing app stores bid to attract developers to their stores, and OEMs benefit when competing app stores bid for placement on their devices. Limiting Google’s ability to participate in this competition harms consumers in two ways: (i) they are unable to take advantage of the value Google would offer, and (ii) they receive worse offers from Google’s competitors because those competitors have reduced incentives to compete.
11. *Fourth*, the injunction should be crafted to limit the risk of free-riding and preserve Google’s ability to earn an economic return on its investments and innovations. Economic logic dictates that market participants will only make the investments needed to innovate and offer consumers increased value if doing so increases their long-run expected profits.¹⁰ If one firm is required to share the fruits of its investments with its competitors, competition can be harmed in two ways: (i) that firm will have less incentive to invest and innovate, and (ii) its competitors will *also* have less incentive to invest and innovate, as they can obtain the same benefits at lower cost through free riding.¹¹ Dr. Bernheim

(“regulation does not always benefit consumers or society. Government intervention in some markets leads to inefficiency, and many laws proposed with the noblest objectives benefit special interest groups at the expense of the general population.”); p. 758 (“regulators often apply regulations badly or use regulations that create harmful distortions in order to help special-interest groups.”). *See also* Bernheim, B. Douglas, and Michael D. Whinston, *Microeconomics*, 2nd Ed., McGraw-Hill Irwin, 2014, at p. 503 (“Economists call a reduction in aggregate surplus below its maximum possible value a *deadweight loss*. In a competitive market without any interventions, aggregate surplus is maximized so there is no deadweight loss.” Emphasis in original.).

⁹ Bernheim Statement, ¶ 7; Tadelis Statement, ¶ 3.

¹⁰ Bernheim, B. Douglas, and Michael D. Whinston, *Microeconomics*, 2nd Edition, McGraw-Hill Irwin, 2014, at p. 333 (“*Investment* refers to up-front costs incurred with the expectation of generating future profits.” Emphasis in original.) *See also* Pindyck, Robert S., and Daniel L. Rubinfeld, *Microeconomics*, 8th Ed., Pearson, 2013, at p. 569 (“[A firm should i]nvest if the present value of the expected future cash flows from an investment is larger than the cost of the investment.”); Jagannathan, Ravi, *et al.*, “A Firm’s Cost of Capital,” *Annual Review of Financial Economics*, Vol. 9, 2017, pp. 259-282, at p. 260 (“The textbook approach to ensuring that capital expenditure decisions are in the interest of firms’ security holders is to undertake projects that have a positive net present value; i.e., the return on invested capital exceeds the cost of capital.”).

¹¹ *See* Pindyck, Robert S., and Daniel L. Rubinfeld, *Microeconomics*, 8th Ed., Pearson, 2013, at p. 693 (“[T]he presence of free riders makes it difficult or impossible for markets to provide goods efficiently.”). *See also* Trial Testimony of B. Douglas Bernheim, *United States of America, et al., v. American Express Company*, 10-CV-4496, August 14, 2014 (“Bernheim Amex Trial Testimony”), 6427:2-6427:8 (“If there is free-riding on investment, the first party doesn’t have the incentive to make the investment to begin with, or has a reduced incentive and makes the investment at a lower level. As a result, possible benefits are lost. And so, free-riding is regarded as a problem, a problem that competitive markets try to resolve in large part through contracts.”); Hubbard, R. Glenn, and Anthony P. O’Brien, *Microeconomics*, 7th Ed., Pearson, 2019, at p. 179

testified at trial that if “you develop something and then your competitor gets the benefit of it too,” then that “takes away their incentives.”¹² Thus, in order to ensure that consumers benefit from enhanced competition, any injunction should ensure that Google retains the ability to set prices for its existing services in response to market forces, that Google can collect revenues for those services securely and reliably, and that Google can charge for any new services it is mandated to provide as part of the injunction. Limiting Google’s ability to do these things, or enabling free riding more generally, will undermine competition and innovation, and tend to harm users, developers, OEMs, and carriers.

12. While my understanding is that Dr. Bernheim and Dr. Tadelis largely agree with these high-level principles, we disagree about their application to Epic’s Proposed Injunction. In particular, as I outline in detail in **Sections III** and **IV** below, we disagree on two core points.
13. The first core point with which I disagree is Dr. Bernheim’s assertion that the injunction must not only eliminate the conduct that the jury found to be anticompetitive at trial, but also prohibit conduct that may “incentivize” or “disincentivize” OEMs, developers, and other market participants from choosing Google’s or its rivals’ products in particular contexts.¹³ Sweeping limits on providing incentives to consumers threaten to chill legitimate competition. Whenever a firm competes to offer consumers a better deal, it changes market participants’ incentives.¹⁴ For example, when a company offers a lower price or a better product, it gives customers an incentive to purchase from that company and disincentivizes them from purchasing from competitors. Overly broad remedies that call into question Google’s ability to offer incentives to its consumers will tend to weaken

(“Private firms are usually not willing to supply public goods because of free riding.”); Mankiw, N. Gregory, *Principles of Economics*, 6th Ed., South-Western Cengage Learning, 2012, at p. 221 (“Profit-seeking firms spend a lot on research trying to develop new products that they can patent and sell, but they do not spend much on basic research. Their incentive, instead, is to free ride on the general knowledge created by others.”).

¹² Trial Testimony of B. Douglas Bernheim, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 27, 2023 (“Bernheim Trial Testimony”), 2404:6-7.

¹³ See, e.g., Bernheim Statement, Section II.A heading (“An effective remedy must prevent Google from foreclosing, impairing, and/or disincentivizing preinstallation through agreements with OEMs”); ¶ 21 (“[Epic’s Proposed Injunction] address[es] this conduct by prohibiting Google from imposing unnecessary frictions to disincentivize users from obtaining apps outside of the Google Play Store”); ¶ 40 (“[Epic’s Proposed Injunction] would prohibit Google from limiting or disincentivizing the preinstallation of Android apps or third-party app stores.”); ¶ 44 (“[Epic’s Proposed Injunction] would prevent Google from entering or enforcing agreements that require or incentivize potential or actual Android app distribution rivals from competing with the Google Play Store.”); ¶ 72 (“[Epic’s Proposed Injunction] does not prevent an OEM or carrier from choosing to place the preloaded Google Play Store or Google apps anywhere on a device, so long as that choice is not mandated or incentivized through a Google agreement.”).

¹⁴ Bernheim, B. Douglas, and Michael D. Whinston, *Microeconomics*, 2nd Edition, McGraw-Hill Irwin, 2014, at p. 7 (“self-interested consumers try to choose the mix of goods and services that provides the highest possible level of personal satisfaction. Their incentives depend on prices. Ordinarily, a high price discourages the consumption of a good, while a low price encourages it.”).

competition and harm users, developers, OEMs, and carriers. Although Epic’s Proposed Injunction states that it shall not “prohibit Google from engaging in bona fide competition on the merits with respect to the distribution of apps on Android,”¹⁵ neither Epic’s Proposed Injunction nor Dr. Bernheim’s statement explains how bona fide competition would be distinguished from the prohibited incentives.

14. The second core point with which I disagree is Dr. Bernheim’s assertion—endorsed by Dr. Tadelis—that the injunction must not only remove barriers to competition but also actively restructure the market to “reestablish an even playing field” and “compensate for past harms to competition.”¹⁶ According to Dr. Bernheim, and echoed by Dr. Tadelis, this requires “decoupling the user side of the market from the developer side”¹⁷—i.e., re-engineering the app distribution market to transform it from a two-sided platform to a single-sided market. To do so, Epic’s Proposed Injunction would mandate that Google provide costly new services to its competitors (e.g., catalog access and library porting as well as distribution of competing stores on the Google Play store (“Play”)) without any compensation.
15. This approach is strongly at odds with the second principle above because it substitutes regulation for market forces. It is also strongly at odds with the third principle above—one that Dr. Bernheim and Dr. Tadelis explicitly endorse—because the catalog access and library porting remedies essentially eliminate Google’s ability and incentive to compete on the merits of its app catalog. Interventions of this kind are likely to harm consumers.
16. The risk of harm is particularly acute in a platform setting, where remedies that change contracts, terms, rules, or incentives on one side of a platform in order to ostensibly benefit one set of consumers (e.g., certain developers) could create harmful spillover effects on other sets of consumers (e.g., other developers, users, OEMs, carriers).¹⁸ This aspect of a platform—particularly when coupled with a rapidly changing technological landscape—makes micro-managing technical details and incentive structures especially risky. Such remedies should at a minimum be analyzed carefully in terms of their potential impacts on competition and consumers. Neither Dr. Bernheim nor Epic’s Proposed Injunction offer any analysis or even discussion of these potential effects.

¹⁵ Epic’s Proposed Injunction, p. 8.

¹⁶ Bernheim Statement, Section II.D header; Tadelis Statement, ¶ 3.

¹⁷ Bernheim Statement, ¶ 63. *See also* Tadelis Statement, ¶ 9 (“Since Developers—not users of Android mobile devices (‘Users’)—are the customers in the market for Android In-App Payment Solutions...”).

¹⁸ Evans, David S., and Richard Schmalensee, “The Antitrust Analysis of Multisided Platform Businesses,” *Oxford Handbook of International Antitrust Economics*, Vol. 1, edited by Roger D. Blair and D. Daniel Sokol, Oxford University Press, 2014, pp. 404-448, at p. 413 (“an accurate analysis of the impact of any platform decision on consumer welfare must take into account all interdependent customer groups ... Business decisions that affect the welfare of one group of users are likely to affect the other groups of users through indirect network externalities.”).

17. Dr. Bernheim contends that remedies restructuring the market are necessary because competing app stores face a “chicken-and-egg problem” due to network effects, and those app stores therefore require affirmative assistance to “enhanc[e] the value [they] can offer users and developers.”¹⁹ I disagree that the existence of network effects provides a valid justification for the proposed assistance to competitors.
18. First, with the barriers to competition removed through other remedies, competing app stores will be able to attract users and developers to their stores if they offer sufficient value. Under the terms of the States’ Settlement, there will be no barrier to competing app stores attracting top developers and offering them attractive terms in exchange for exclusivity. Dr. Bernheim notes in his statement that “the best strategy for overcoming network externalities is to offer distinctive content not available on the Google Play Store.”²⁰ Epic itself has argued that it successfully used this strategy to enter and compete with Steam and other established game distributors on PCs.²¹ Epic has also stated that it considered exclusive deals with developers to be “a first- or second-year business strategy” to grow and after that their focus was on strategic partnerships.²² The States’ Settlement would allow for that, as it prohibits Google from entering into Project Hug-like agreements committing developers to launch their catalog of apps on Play at the same time or with the same features as other Android app stores (except for those run by the largest companies in the world) for a period of four years, giving competing app stores ample time to attract

¹⁹ Bernheim Statement, ¶¶ 23, 28.

²⁰ Bernheim Statement, ¶ 48. *See also* Bernheim Statement, ¶ 13.

²¹ Trial Testimony of Steven Allison, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 6, 2023 (“Allison Trial Testimony”), 230:17-233:9 (“Q... Did Epic use any other strategies to grow the store? A... it was really important for us to get important games and strategic partnerships that players would be excited about exclusively for a timed exclusive period... consoles have used timed exclusives as a business strategy to grow their platforms as well for decades, and we had never seen that in PC. So we also decided to pursue a very similar strategy.”); Dingman, Hayden, “A Year In, the Epic Games Store’s Fight Against Steam Has Made PC Gaming Better for Everyone,” *PCWorld*, December 6, 2019, <https://www.pcworld.com/article/398473/a-year-in-the-epic-games-stores-fight-against-steam-has-made-all-pc-gaming-better.html>, accessed April 21, 2024 (“In 2019 ... Epic shelled out a ton of money for timed exclusives. Good ones, too!”); Statt, Nick, “Epic vs. Steam: the Console War Reimagined on the PC,” *The Verge*, April 16, 2019, <https://www.theverge.com/2019/4/16/18334865/epic-games-store-versus-steam-valve-pc-gaming-console-war-reimagined>, accessed April 21, 2024 (“Sweeney says the company will continue this strategy [of securing exclusive titles for its store], either until Epic’s store becomes popular enough to stand on its own or Valve acquiesces to more developer-friendly terms.”).

²² Allison Trial Testimony, 233:21-234:12 (“Q. And how many of those did you enter into the first year? A. 120 or so. Q. How many exclusive minimum guarantee deals do you expect to have this year? A. Two. Q. And why has the number declined so rapidly? A. The audience size has grown from 15 million to 65 million. Our partners have started bringing games at scale. We’ve also launched the ability for publishers to self-publish their games, and we’re seeing a ton of great adoption and people are publishing hundreds of games every month. We really considered that a first- or second-year business strategy and that we would start to reduce the volume of those deals to really just primarily focus on strategic partnerships. We still do them and we still will do them, but we don’t need to do them at the scale that we needed to in our first couple of years.”).

developers and users.²³

19. Vigorous competition in Android app distribution is not hypothetical. Current and likely future competitors include many large and successful firms that can easily support the costs of entering and building scale if they can develop products that offer users and developers substantial value. Current competitors include large firms with established presences in the US, such as Samsung and Amazon, as well as large firms in other countries such as PhonePe, India's largest payments app (backed by Walmart), which recently announced the launch of the Indus Appstore, with the goal of providing app developers with a "credible alternative" to Play.²⁴ Microsoft is preparing to launch a new app store for mobile games on Android as soon as this year.²⁵ Epic also just recently announced plans to launch an Android app store.²⁶ Many other large firms have the resources and capabilities necessary to enter the market, as Dr. Bernheim noted in his statement.²⁷
20. Second, eliminating the two-sided nature of the platform is not necessary to restore the market conditions that would have existed but for the conduct that was challenged at trial. The conduct the jury found to be illegal was limited to the period after 2016,²⁸ and it largely focused on conduct that began in 2019 or later (Project Hug, RSA 3.0, Project Banyan). However, Play had a catalog advantage years before this conduct began. As early as 2011, Android Market (Play's predecessor) had a catalog of approximately 150 thousand apps. This was far larger than the catalogs of its competitors at the time—for example, the Amazon app store had only 5 thousand apps.²⁹ Google built its app catalog

²³ States' Settlement, § 6.5.

²⁴ "PhonePe Announces the Launch of the Indus Appstore Developer Platform," *PhonePe*, September 23, 2023, <https://www.phonepe.com/press/phonepe-announces-the-launch-of-the-indus-appstore-developer-platform/>, accessed April 10, 2024; Singh, Manish, "Walmart's PhonePe Launches India App Store in Challenge to Google," *TechCrunch*, February 21, 2024, <https://techcrunch.com/2024/02/21/phonepe-launches-android-app-store-with-amazon-meta-and-microsoft-apps/>, accessed April 10, 2024.

²⁵ Bradshaw, Tim, "Microsoft Plans Mobile Games App Store to Rival Apple and Google," *Financial Times*, March 20, 2023, <https://www.ft.com/content/7707705e-b288-4531-b30d-7fa993325018>, accessed March 5, 2024.

²⁶ "EpicGames on X: We're coming to iOS and Android," X, March 20, 2024, <https://x.com/epicgames/status/1770500825166545305?s=46&t=r-bnKTcnGTHwNGkQr-E6YQ>, accessed April 14, 2024.

²⁷ Bernheim Statement, ¶ 31 ("Many of the likely entrants into Android app distribution are large companies such as Amazon, Microsoft, and Samsung").

²⁸ Final Jury Instructions for *Epic Trial*, *In re Google Play Store Antitrust Litigation*, 21-md-02981-JD, December 6, 2023, Instruction No. 40.

²⁹ Trial Testimony of Matthew Gentzkow, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 28, 2023 ("Gentzkow Trial Testimony"), 2631:19-2632:2 ("Q. Now, this difference between the number of apps and the different app stores, is it new that Google Play has a lot more? A. No, absolutely not. Google Play has, I think, succeeded early on in competing to attract a lot of apps. So this is an example of

advantage through investments at a time when Dr. Bernheim testified that Google did not have market power but had “first-mover advantages.”³⁰ Accordingly, to the extent that the remedies Epic has proposed are designed to eliminate any app catalog advantage for Play, those remedies would take away an advantage that Google achieved through successful competition on the merits, not anticompetitive conduct.

21. Finally, Dr. Bernheim himself has taken the position that competing app stores would have succeeded in achieving scale and providing vigorous competition had it not been for the specific challenged conduct assessed by the jury.³¹ If Dr. Bernheim is correct that removing the challenged conduct in 2016 and later years would have been sufficient to restore competition, there is every reason to believe that the same would be true today.

III. EPIC’S PROPOSED REMEDIES IN THE ANDROID APP DISTRIBUTION MARKET (II)³²

A. Preinstallation Exclusivity (II.A.1)

22. Epic’s Proposed Injunction would prohibit Google from enforcing or entering into agreements that limit or disincentivize the preinstallation, placement, or grant of installation permissions for any Android app or third-party app store.³³ It further prohibits Google from requiring OEMs and carriers to introduce additional steps for users to enable or access preinstalled third-party app stores beyond those required to access Play when it is preinstalled.³⁴
23. With the exception of the “Premier Tier” terms of RSA 3.0s, Google’s current agreements with OEMs and carriers do not limit the preinstallation of Android apps or third-party app

some date from 2011. So you can see way back in 2011, Google Play had 150,000 apps; the Amazon Appstore had only 5,000. If you looked at other competing app stores at that point in time, they also had fewer.”).

³⁰ Bernheim Trial Testimony, 2479:16-2480:24.

³¹ Bernheim Trial Testimony, 2375:18-23 (“Google has monopoly power in the market for app distribution on Android smartphones; that it engages in anticompetitive conduct that sustains and enhances and maintains that power; and that as a result of that, their customers, meaning users and developers are harmed.”); 2394: 4-5 (“Google also has conduct that impacts the feasibility of preinstallation.”); 2396: 21-23 (“Google also engages in conduct to essentially discourage these OEMs from competing with Google Play with their stores.”); 2452: 10-11 (“Google’s conduct harms users and developers by causing app distribution fees to be higher for developers.”); 2454:23 – 2455:3 (“Google’s conduct ... allows it to create and maintain monopoly power in the market for app distribution on Android smartphones. And then, of course, the final conclusion is that users and developers have suffered as a result.”).

³² After each heading in **Sections III** and **IV**, I include in parentheses the section of Epic’s Proposed Injunction that I address.

³³ See Epic’s Proposed Injunction, II.A.1.

³⁴ See Epic’s Proposed Injunction, II.A.1.i.

stores, nor do they require OEMs and carriers to introduce any additional steps to access preinstalled third-party app stores.³⁵ Under the States' Settlement, the Premier Tier terms, including preload or home screen exclusivity, will not be enforced or included in agreements.³⁶ The States' Settlement also establishes that Google cannot require OEMs to seek its consent before preinstalling an app store, provided that Google may take reasonable steps that are tailored to protect user privacy or security.³⁷ Dr. Bernheim acknowledges that the States' Settlement prohibits Google from entering into agreements that prevent the preinstallation of rival app stores.³⁸

24. Epic's proposal goes much further, prohibiting Google from offering OEMs and carriers any deal that would change the OEM's or carrier's *incentives* related to the preinstallation, placement, or grant of installation permissions to any Android app or third-party app store. Dr. Bernheim states that this is necessary to "prevent Google from utilizing the pertinent RSA 3.0 restrictions, or conduct that replicates its effects, to foreclose opportunities for preload deals between competing app stores and either OEMs or carriers."³⁹ He acknowledges that this provision goes beyond the prohibition of conduct deemed unlawful by the jury and instead prevents the undermining of preinstallation opportunities "in other ways."⁴⁰
25. Dr. Bernheim does not articulate what those other ways are, or what conduct would be construed as "disincentivizing" the installation, placement, or grant of installation permissions for competing app stores.⁴¹ The only hypothetical conduct that Dr. Bernheim specifically identifies is that referenced in sub-paragraph II.A.1.i, which limits Google's creation of additional usage frictions for preinstalled third-party app stores.⁴²

³⁵ Trial Testimony of James Kolotouros Testimony, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 13, 2023 ("Kolotouros Trial Testimony"), 1144:20-1145:1 ("Q. And does the MADA prohibit a phone maker from preinstalling another app store on the phone? A. No. Q. And does the MADA prohibit the phone maker from preinstalling another app store on the home screen of the phone? A. No."); 1155:6-11 ("Q. So does that mean that more than 95 percent of the phones in the United States are not part of the premier tier? A. Yes. Q. And all of those phones are fully free to preload another app store if that's what they want to do? A. That is correct, yes."); Trial Testimony of Zhiyun Qian, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 21, 2023 ("Qian Trial Testimony"), 2224:17:20 ("Q...if a user tries to download an app from a preinstalled app store, will the user get any warnings from the operating system? A. No").

³⁶ See States' Settlement, § 6.6.

³⁷ See States' Settlement, § 6.8.

³⁸ Bernheim Statement, ¶ 30.

³⁹ Bernheim Statement, ¶ 40.

⁴⁰ Bernheim Statement, ¶ 42.

⁴¹ See Bernheim Statement, ¶¶ 11, 30, 39-42.

⁴² Bernheim Statement, ¶ 41.

26. By prohibiting agreements that change OEMs' incentives regarding preinstallation, Epic's Proposed Injunction creates uncertainty about whether it would prohibit Google from simply competing to improve the quality of Play and offer OEMs and carriers a better deal. Whenever a firm competes on the merits, it reduces its customers' incentive to choose competing products.⁴³ Thus, any time Google competes by improving the value of Play, it reduces OEMs' and carriers' incentives to install or give valuable placement to competing app stores. For example, if Google successfully attracted more top game developers to offer their apps in Play, this would reduce an OEM's incentive to install a competing games store from Microsoft. Terms that render Google's ability to engage in this kind of competition uncertain or contested could harm users, developers, OEMs, and carriers.
27. By the same token, the provision of Epic's Proposed Injunction relating to preinstallation of "Android apps" in general (as opposed to app stores) could chill Google's ability to compete in other markets such as video streaming, email, and maps which are distinct from the markets considered by the jury in this case. For example, any time Google improves the quality of its YouTube video streaming app, it reduces OEMs' and carriers' incentives to preinstall competing video streaming apps. Similarly, competing to deliver more value to consumers through apps like Gmail and Maps would also "disincentivize" the installation of competing email or mapping apps. Dr. Bernheim offers no explanation for why the proposed terms applied to "Android apps" would benefit competition in the markets in which the jury found that Google engaged in anticompetitive conduct.
28. Dr. Bernheim fails to address the vagueness and broad scope of this provision. He claims that it "does not prevent Google from engaging in legitimate competition by reaching agreements with OEMs or carriers to preload the Google Play Store or other Google apps,"⁴⁴ but he does not discuss how prohibited disincentives are to be distinguished from legitimate competition.
29. Even a more limited version of this provision that only prohibited revenue-sharing or other monetary incentives given by Google to OEMs or carriers is likely to harm consumers. For example, competition for preinstallation and placement bids up the price OEMs can obtain and allows them to capture more of the value they create. Removing a strong bidder from competing for preinstallation would mean that other bidders would face less competition and therefore bid less or not at all, which would decrease the share of the overall value that OEMs can capture. From an economic point of view, sharing revenue with OEMs functions like a price cut, reducing the marginal cost of every incremental device that the

⁴³ Bernheim, B. Douglas, and Michael D. Whinston, *Microeconomics*, 2nd Edition, McGraw-Hill Irwin, 2014, at p. 7 ("The procedures used to allocate scarce resources create incentives for people to engage in certain activities and to avoid others. ... [S]elf-interested consumers try to choose the mix of goods and services that provides the highest possible level of personal satisfaction. Their incentives depend on prices. Ordinarily, a high price discourages the consumption of a good, while a low price encourages it.").

⁴⁴ Bernheim Statement, ¶ 42.

OEM makes. That benefits OEMs and increases their incentive to invest in trying to sell more devices, which benefits consumers. Accordingly, revenue-sharing incentives will tend to lead to lower device prices,⁴⁵ greater quality, and (thus) higher output. Prohibiting such incentives will have the opposite effect, diminishing Google’s ability to compete, in particular with Apple. All these benefits (lower device prices, greater quality, and higher output) are potentially enhanced by the fact that many OEMs earn limited profits and could be induced to exit if diminished competition reduced their returns.⁴⁶

30. The States’ Settlement includes an explicit provision allowing Google to enforce “generally applicable policies relating to content and functionality (e.g., inappropriate or illegal content, gambling and crypto mining functionality).”⁴⁷ Epic’s Proposed Injunction contains no such provision. Limiting Google’s ability to enforce these kinds of content and functionality policies will tend to harm consumers because some OEMs and carriers may prefer to compromise on quality or security—for example, because this reduces their costs or because they receive payments from developers of low-quality or harmful apps.

B. Agreements with Actual or Potential Competing Distributors (II.A.2)

31. Epic’s Proposed Injunction would prohibit Google from entering into agreements that require or incentivize “any potential or actual provider of an Alternative Android App Distribution Channel (a ‘Competing Distributor’) to scale back, refrain from increasing

⁴⁵ For example, some research concludes that the revenue OEMs get from including bloatware on their devices gets passed down to the consumer in the form of lower product prices, leading to a win-win situation for both the consumer and the OEM. Similarly, revenue-sharing agreements would offer OEMs and carriers an additional revenue stream that could result in savings being passed to consumers, and thus lower device prices. Cavusoglu, Hasan, *et al.*, “Bloatware and Jailbreaking: Strategic Impacts of Consumer-Initiated Modification of Technology Products,” *Information Systems Research*, Vol. 31, No. 1, 2020, pp. 240-257, at p. 240 (“Because the firm passes part of the bloatware revenue to consumers in the form of a lower price, whenever bloatware inclusion benefits the firm, consumers also benefit.”). *See also* Gans, Joshua S., “Three Things About Mobile App Commissions,” NBER Working Paper No. 32339, available at <https://www.nber.org/papers/w32339> (“eliminating app commissions will lead to higher device prices.”).

⁴⁶ Between 2017 and 2023, the number of smartphone OEMs dropped by 500 to reach only 250 companies in 2023. Many large tech companies such as LG, Nokia, and Amazon have already tried and failed to manufacture profitable and viable smartphones. In their 2020 paper, Fan and Yang found that regardless of quality, a reduction in the number and variety of smartphone products was detrimental for both consumers and carriers. *See* Rees, Katie, “The 6 Biggest Companies That Failed in the Smartphone Industry,” *MakeUseOf*, October 26, 2021, <https://www.makeuseof.com/biggest-companies-failed-smartphone-industry/>, accessed April 25, 2024; Savov, Vlad, “Why Do Profit-Seeking Companies Keep Making Profitless Android Phones?,” *The Verge*, February 3, 2016, <https://www.theverge.com/2016/2/3/10894200/android-smartphone-oem-profit>, accessed April 25, 2024; Fan, Ying, and Chenyu Yang, “Competition, Product Proliferation, and Welfare: A Study of the U.S. Smartphone Market,” *American Economic Journal: Microeconomics*, Vol. 12, No. 2, 2020, pp. 99-134, at p. 118 (“In summary, the results suggest that removing any one or two of the existing products in this market leads to a decrease in welfare...Not surprisingly, consumers are better off with the additional product in the market...Carriers also earn more profits”).

⁴⁷ States’ Settlement, § 6.7.2 (a).

investment into, or abandon its distribution of Android apps or its entry into the distribution of Android apps,” including by offering any share of Play revenue.⁴⁸ In particular, Google would be prohibited from offering any share of Play revenue to any actual or potential competing distributor, or making any other payments that are conditioned on particular actions related to competing distribution channels.

32. Google does not currently have agreements with actual or potential competing distributors that require them to refrain from investing in “Alternative App Distribution Channels.” The States’ Settlement includes limits on Google’s ability to negotiate parity provisions with developers, which I address in **Section III.C**.
33. Dr. Bernheim contends that the States’ Settlement does “not prevent Google from signing contracts with developers that disincentivize them from developing their own app distribution channels”⁴⁹ and that this requires the additional relief summarized above. Dr. Bernheim does not specify what forms of incentives do or do not fall under this rubric, nor does he explain why providing a share of revenues in agreements that are unconnected to the conduct identified as unlawful by the jury will disincentivize rivals’ entry into Android app distribution.
34. The States’ Settlement addresses the primary concerns regarding agreements with potential app store competitors that Dr. Bernheim testified to at trial, including the terms of Google’s Project Hug and RSA 3.0 agreements.
35. Epic’s proposed remedy is dramatically broader, and it has the potential to substantially chill competition. It applies to *any* actual or potential competitor in app distribution, even those who have evinced no intention to launch a competing app store. This is problematic because Epic’s theory at trial, detailed in Dr. Bernheim’s testimony, was that developers, who are Google’s customers, are also potential app store competitors.⁵⁰ In fact, under Epic’s proposal virtually any developer, OEM, or other platform participant could be construed to be a potential “Competing Distributor.”
36. Any benefit from limiting any effects on developers’ incentives to open app stores appears limited because most developers—particularly smaller developers that make up the bulk of

⁴⁸ Epic’s Proposed Injunction, II.A.2.

⁴⁹ Bernheim Statement, ¶ 31.

⁵⁰ Bernheim Trial Testimony, 2409:8-21 (“Q. ...You also mentioned the Project Hug agreements with developers. How do they fit into this buying-off-rivals framework? A. Well, remember, the Project Hug agreements provided generous payments to the developers in exchange for agreeing to these exclusionary provisions. And if you’re a developer, think about the position that this is putting you in. Some of these developers -- there is indication in the trial testimony, I think, certainly in the record, that some of the developers considered launching game stores; and had they done that, they would have been actually competing with Google Play. Instead, they, by virtue of being induced through these incentives to agree to these terms, put themselves in a position where they couldn’t even take the material that they developed for their own apps and launch an app store and have any exclusive content for their own apps. So this would have strongly discouraged them from entering.”).

developers with apps on Play—are likely unable or uninterested in opening their own app stores. Evidence at trial suggested that even many large developers were not likely to open their own stores because of the costs involved.⁵¹ However, if Google cannot enter into agreements that reduce developers’ incentives to open their own app stores, then the injunction could limit or call into question Google’s ability to offer any developer incentives or attractive terms to distribute their apps through Play.

37. This is because any developer in the market for Android app distribution faces a “make or buy” decision: it can distribute through Play, or it can create its own distribution channel. Whenever a firm competing on the merits offers a customer a better deal on a product or service, the firm by definition makes it less attractive for the customer to instead produce the same product or service in-house. If a record label offers an artist attractive terms to distribute their music, it makes it less attractive for the artist to start a label of their own. If a brake supplier offers Toyota a better deal on brakes, it makes it less attractive for Toyota to develop brakes for its cars in-house. If a department store offers product suppliers an attractive package of incentives and promotions, it makes it less attractive for those suppliers to open their own retail store.
38. Similarly, offering developers a better deal through financial (and other) incentives by definition reduces their incentive to open their own app store since the incremental value of opening a new app store to distribute their own apps is lower relative to distribution on Play. Any offer from Google that makes it more attractive for a developer to “buy” distribution through Play makes it less attractive for that same developer to “make” distribution through self-distribution or opening their own app store. Any offer to an OEM or carrier that makes it more attractive for them to preinstall Play on their devices makes it less attractive for them to instead develop their own app store in-house.
39. Thus, prohibiting Google from offering any agreements that reduce other companies’ incentives to open their own app stores creates uncertainty about Google’s ability to make competitive offers that benefit developers, OEMs, and carriers. That would also harm users, as lower returns to developers, OEMs, and carriers will tend to result in lower overall quality of the apps, devices, and services offered in the ecosystem.

⁵¹ Trial Testimony of Armin Zerza by Video Deposition, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 29, 2023 125:17-126:9 (“We were exploring the idea of a mobile store... We never pursued it because the economics of the mobile store didn’t make any sense.”); Trial Testimony of Timothy Sweeney, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 20, 2023, 2047:1-19 (“Q. Mr. Sweeney, you, yourself, do not believe that Activision really intended to open an app store, do you? A. I’m not certain, but I was -- I have questioned Activision’s intent throughout the time they were proposing to us to build an app store together. ...Q. And your conversation with Mr. Zerza included discussion of the possibility of Epic and Activision opening an app store together -- an Android app store together; right? A. Yes. Q. Those talks ended several years ago; correct? A. Yes. Q. And the reason those talks ended, Mr. Sweeney, is because Epic did not trust Activision to partner with Epic on an app store; right? A. Yes, exactly.”); 2094:17-29 (“Q. And I believe your testimony was that you had suspicion that ABK was not serious about launching its own mobile distribution platform on Android; right? A. That’s right.”).

40. Epic’s proposed prohibition on agreements that include revenue-sharing agreements would directly harm OEMs and carriers that would otherwise benefit from revenue sharing. Moreover, as noted above, sharing revenue with OEMs functions like a price cut, which will tend to lower device prices and/or increase quality, thus benefiting users and thereby also developers through an increase in the number of smartphone users who can download Android apps.
41. As with the exclusivity provisions discussed in **Section III.A** above, Dr. Bernheim fails to address the vagueness and broad scope of these provisions. He claims that nothing in them “prevents Google from competing with rivals through strategies that enhance the value users and developers derive from its own offerings,”⁵² but he does not explain how prohibited incentives/disincentives are to be distinguished from legitimate competition.

C. Agreements with Developers (II.A.3-5)

42. Under Epic’s Proposed Injunction, Google would not be allowed to enter into agreements that:
 - a. Require or incentivize distribution of any Android app or any unique app content exclusively on Play.⁵³
 - b. Specify the timing of the release of a developer’s Android app on Play, or the pricing or content thereof, in reference to the timing, pricing, or content of the apps on other Android app distribution channels;⁵⁴ and/or
 - c. Prohibit the withdrawal of any Android app from Play without Google’s consent.⁵⁵
43. Google does not currently have any agreements that require distribution of Android apps exclusively on Play. The States’ Settlement addresses the primary concerns regarding agreements with developers that Dr. Bernheim testified to at trial. Under the States’ Settlement, Google may not enforce or enter into agreements that: (i) require a developer to set prices in Play at or lower than the developer’s prices offered through other Android app distributions channels; (ii) require developers to launch apps on Play at the same time or earlier; or (iii) require apps on Play to have the same or better features than alternative channels on Android. The States’ Settlement does provide Google with the ability to enter into agreements with such commitments on an app-by-app basis, or after two years if the

⁵² Bernheim Statement, ¶ 45.

⁵³ See Epic’s Proposed Injunction, II.A.3.

⁵⁴ See Epic’s Proposed Injunction, II.A.4.

⁵⁵ See Epic’s Proposed Injunction, II.A.5.

provisions concern alternative app stores owned or controlled by a company with annual revenues exceeding \$100 billion.⁵⁶

44. Epic’s proposed remedy is far broader, prohibiting any terms related to the release timing, pricing, or content of apps offered on Play that reference other distribution channels, as well as prohibiting any terms that “incentivize” developers to offer their apps exclusively on Play.
45. Dr. Bernheim acknowledges that these provisions “go beyond prohibiting the conduct the jury deemed illegal at trial,”⁵⁷ but contends that they are necessary to help rivals overcome network externalities and to “foster competition in Android app distribution by providing Google Play’s rivals with opportunities to engage users through the provision of unique content.”⁵⁸ He also contends that prohibiting agreements that require or incentivize distribution of any Android app or any unique app content exclusively on Play is necessary because the States’ Settlement “does not prevent Google from signing agreements with developers to exclusively list their apps on the Google Play Store.”⁵⁹ Finally, he argues that the limited exemptions included in the States’ Settlement are either “ill-conceived” (in the case of permitting agreements pertaining to companies earning revenues above \$100 billion) or do not prevent Google from “suppress[ing] competition just as effectively through more narrowly targeted restrictions” (in the case of permitting agreements on an app-by-app basis).⁶⁰
46. I disagree with these arguments. App store owners compete to attract developers, offering discounts, promotions, co-investment, enhanced service, and other valuable inducements to choose their respective stores. In some cases, app stores may compete to attract developers on an exclusive basis. As Dr. Bernheim testified at trial, developers benefit directly when app stores compete for their business, as this lowers the effective price that app developers pay for distribution.⁶¹ Such competition also benefits users because it increases the incentives of developers to produce differentiated, high-quality apps that app stores will want to carry, and because any discounts to developers may (depending on the type of the app and the developer’s cost structure) be passed on in the form of lower prices.

⁵⁶ See States’ Settlement, §§ 6.4, 6.5.

⁵⁷ Bernheim Statement, ¶ 46.

⁵⁸ Bernheim Statement, ¶¶ 48-49.

⁵⁹ Bernheim Statement, ¶ 31.

⁶⁰ Bernheim Statement, ¶ 31.

⁶¹ Bernheim Trial Transcript, 2505:13-21 (“Q. The incentives that Google offered through Project Hug had the effect of lowering the commission rate that app developers paid; right? A. It did, yes. Q. And through Project Hug, Google provides discounts to developers on Google products and services; right? A. It does. Q. And discounts are a form of competition; right? A. They are usually a form of competition.”).

47. The proposed remedy would severely limit Google's ability to participate in this competition. Under Epic's proposed terms, Microsoft, Amazon, Epic, and other competing Android app store developers could offer developers attractive terms to place full-featured versions of their apps in the developers' respective stores when those apps are released to the wider market, but Google would be unable to offer similar or improved terms in response. Moreover, third-party Android app stores could offer developers incentives *not* to put their apps in Play, and Google would be unable to respond by competing for exclusivity itself. The result would be developers receiving less attractive offers from Google, and also less attractive offers from other Android app stores that no longer need to match Google's bids. Developers would receive less return on the apps they have invested in creating, and they would have less incentive to invest in creating high-quality apps in the future. Users and other Android market participants could be harmed through fewer apps, lower quality apps, and/or higher prices.
48. The proposed remedy could inhibit developers' ability to reach deals with Google that benefit them. Contract provisions that specify features like the timing of the release of an app or a major update to an app, the app's quality in terms of features / capabilities, and the terms with which the app can be withdrawn from the store are essential when app stores compete for developers, because they specify the developer's side of the bargain. A developer that offers an app or feature in an app store long after the app or feature is released or removes the app from the app store after a short time dramatically reduces the value the app store receives. In economic terms, the problem is the risk of *hold up*.⁶² Whenever one party offers valuable compensation up front in exchange for benefits that the other party will only provide later and that are not specified precisely in a contract, the other party can take advantage of the uncertainty and lack of specificity in the contract to hold up its performance and extract concessions that were not part of the parties' bargain. Economists have long recognized that in the face of uncertainty, contracts that specify timing, quality, or pricing using rivals' prices or product characteristics as benchmarks can create value, overcome (at least in part) the hold-up problem, and increase efficiency.⁶³ In

⁶² Hold up is a well-known source of inefficiency in contracting. *See, e.g.,* Hermalin, Benjamin E., and Michael L. Katz, "Information and the Hold-Up Problem," *RAND Journal of Economics*, Vol. 40, No. 3, 2009, pp. 405-423, at p. 405 ("The hold-up problem is a central issue in economic analysis. It arises when one party makes a sunk, relationship-specific investment and then engages in bargaining with an economic trading partner. That partner may be able to appropriate some of the gains from the sunk investment, thus distorting investment incentives[.]"). *See also* Yang, Yadi, "A Survey of the Hold-Up Problem in the Experimental Economics Literature," *Journal of Economic Surveys*, Vol. 35, No. 1, 2021, pp. 227-249, at p. 227 ("When multiple parties make nonrecoverable relationship-specific investments that generate a joint surplus to be divided through *ex post* bargaining, underinvestment may occur. ... This underinvestment is referred to as the 'hold-up problem' in the economic literature.").

⁶³ Salop, Steven C., and Fiona Scott Morton, "Developing an Administrable MFN Enforcement Policy," *Antitrust*, Vol. 27, No. 2, 2013, pp. 15-19, at p. 15 ("MFNs can be used to prevent opportunism in situations where one of the parties makes relationship-specific investments in order to create a new product or improve an existing product or service. MFNs also can be used by a firm to deter rent-seeking delays and hold out

a previous litigation, Dr. Bernheim testified to the importance of contractual commitments.⁶⁴

49. App stores face hold up risk because they often offer up-front consideration to developers in exchange for uncertain future benefits associated with distribution of apps that may not have been released or even created at the time a contract is signed. For example, Google has offered developers technical advice to optimize games, co-marketing campaigns, cloud credits, advertising credits, and access to advertising consultants.⁶⁵ At the time that these benefits are offered, it is uncertain what features or versions of apps developers will develop and launch. In those circumstances, app stores face a risk that they will not get benefits in return for what they have provided developers, and developers have an incentive to take advantage of the uncertainty to hold out and extract even more benefits. Indeed, Google invested significant resources to help bring Epic's Fortnite game to Play.⁶⁶ Part of the reason this investment made sense for Google was that if Fortnite succeeded, then Google would earn revenue in the form of service fees on in-app purchases. Google and app developers such as Epic both invest in an app's success, and both share in the

problems in instances where important market information such as demand, value, or costs would be discovered after some contracts are signed. In these circumstances, the MFN also may enable the parties to create or improve a product, where in its absence they would face too much risk and might choose not to.”); Baker, Jonathan B., and Judith A. Chevalier, “The Competitive Consequences of Most-Favored-Nation Provisions,” *Antitrust*, Vol. 27, No. 2, 2013, pp. 20-26, at pp. 20-21 (“An important source of efficiencies for vertical contracts derives from the role of such agreements in controlling ‘hold up’ problems. When one firm makes substantial investments specific to trading with a given counterparty, the counterparty may try to ‘hold up’ the investing party by worsening the terms of trade.”).

⁶⁴ Bernheim Amex Trial Testimony, 6451:22-6452:5 (“I think it’s widely recognized in economics that there is enormous economic value in contractual pre-commitments and having contracts that say look, we’re going to say by contract that you can’t do something so I don’t have to be in a position to retaliate afterwards because guess what, some merchants, some counter-parties in various undertakings will do these sorts of things anyway.”).

⁶⁵ Exhibit 5714.R at 004 (“Four new cross-Google ‘service packs’, across the developer lifecycle[:] Build & Test[,] Launch & Grow[,] User Acquisition[, and] Community Development”); at 004 (“Build & Test[:] Enable high-fidelity games on Android; reduce costs”; “Cloud Credits”; “Android Dev Tech & Cloud consultations”); at 004 (“Launch & Grow[:] Enable bigger launches & extended growth”; “Play Store Promotions”; “Co-marketing Campaigns”; “Play ‘Growth Consulting’”; “YT influencers”).

⁶⁶ According to Lawrence Koh, Global Head of Games Business Development at Google Play at the time, Google accommodated Epic’s request to launch Fortnite on an accelerated schedule of less than two weeks, while the normal timeline for similar projects was approximately two to three months. In order to fulfill this request, Google put together a “task force team specifically focused on supporting Epic launching Fortnite on Google Play.” The efforts undertaken by the Google team included: (i) technical optimization of Fortnite to improve stability, (ii) integration of Google Play platform services, and (iii) aligning Google’s marketing efforts with Epic’s marketing plans. Google also had a team of “dedicated testers” to ensure quality because the limited time meant that everything had to be “done correctly on one shot.” Evidence presented at trial also showed that Epic recognized that its launch on Google Play “[w]ouldn’t have happened without 24-hour support.” Trial Testimony of Lawrence Koh, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 7, 2023, 526:1-530:11.

benefits of that success. By circumventing this agreement and free riding on Google's investment, Epic threatened this mutually beneficial incentive structure.

50. To address this risk, app stores must be able to specify when developers will launch their apps, how long they will be available on the store, and the features those apps will include. A natural way to do this is to agree that a developer should release an app or feature on the counterparty's app store at the time that they release it to the broader market (i.e., through other distribution channels), and that they will not subsequently withdraw the app or feature. Such terms can be procompetitive and efficient, even though and, in fact, because they reference rivals. The States' Settlement would allow limited use of these terms on an app-by-app basis; Epic's Proposed Injunction would rule them out entirely. The term in the States' Settlement relating to companies with revenues over \$100 billion allows for benchmarking release timing and quality to the largest market participants, which are capable of bidding against Google to secure unique features or developer exclusivity, and which, more broadly, have the resources to overcome any entry barriers associated with network externalities.
51. Further, Epic's proposal to prohibit Google from offering a developer any "incentive" that could result in the developer distributing only through Play—or distributing particular apps or app content only through Play—creates uncertainty about Google's ability to engage in a wide range of competition on the merits. Whenever Google improves the prices, quality, or service offered through Play, that inherently increases a developer's incentive to distribute through Play and decreases its incentive to distribute through a rival app store. If the prices, quality, or service offered through Play are attractive enough, the developer might choose to distribute only through Play. That is the result of competition. As written, the proposed remedy could call into question almost any action Google would take that increases the value it offers through Play.
52. Prohibiting the offering of "incentives" to developers, financial or otherwise, also weakens competition between app stores for users. As Dr. Bernheim has emphasized,⁶⁷ offering distinctive promotional content is a standard method of attracting customers and a way that app stores can compete for users.⁶⁸ For example, an app store can, in partnership with developers, offer exclusive in-game content such as certain skins or in-game credit, conditional upon downloading the app from the app store. Prohibiting Google from competing for this kind of content directly harms developers because it prevents them from

⁶⁷ Bernheim Statement, ¶ 48 ("the best strategy for overcoming network externalities is to offer distinctive content not available on the Google Play Store."); Bernheim Trial Testimony, 2401:7-10 ("you need to offer the consumer a compelling reason to do something else. And the way that that's typically done in these types of markets is to offer some sort of exclusive content").

⁶⁸ Carlton, Dennis W., and Jeffrey M. Perloff, *Modern Industrial Organization*, 4th Ed., Pearson, 2015, at p. 295 ("In most markets, firms compete not just on price but also along many other product dimensions, such as quality, reliability, research and development, and promotional activity.").

making deals that would have benefitted them. It also harms users because they may have fewer high-quality, distinctive apps to choose from.

53. Further, developers may have their own reasons for distributing through a single store, such as concentrating downloads on a single store to obtain a top ranking in that store and streamlining their marketing efforts. An app store may also provide development tools and resources that enable developers to improve their apps, and developers may prefer to distribute through a single store that is superior along these dimensions. In these situations, Google's incentives to persuade developers to choose Play will inherently create disincentives for developers to choose any rival app store. Because making competitive offers itself can create incentives that result in exclusivity, prohibiting Google from offering incentives that result in exclusive distribution would prohibit competitive offers that benefit developers.
54. As with other proposed remedies, Dr. Bernheim fails to address the vagueness and broad scope of these provisions. He claims that they do not "prevent Google from encouraging developers to distribute through the Google Play Store by offering better terms or higher quality app distribution services,"⁶⁹ but he does not explain how prohibited disincentives are to be distinguished from legitimate competition, or discuss the limits on that competition that would necessarily result from banning terms that specify timing, quality, and withdrawal.

D. Direct Downloading (II.B)

55. Under Epic's Proposed Injunction, Google would not be allowed to engage in any conduct that prohibits or disincentivizes the downloading, granting of permissions, installing, or updating of an Android app through any "Alternative Android App Distribution Channel."⁷⁰ The install flow for downloading apps would be required to be identical for apps downloaded through Play, third-party app stores, websites, and other app distribution channels,⁷¹ except that (i) Google may include a single one-tap permission screen for web browsers or sideloaded third-party app stores that asks the user for consent to allow that source to install other apps upon the first installation attempt,⁷² (ii) Google may include a single one-tap permission screen for apps sideloaded outside of a third-party app store (e.g., from a web browser),⁷³ and (iii) Google may impose additional "frictions"—i.e., security steps—only for apps or third-party app stores that decline a notarization-like

⁶⁹ Bernheim Statement, ¶ 49.

⁷⁰ See Epic's Proposed Injunction, II.B.1.

⁷¹ See Epic's Proposed Injunction, II.B.1.

⁷² See Epic's Proposed Injunction, II.B.2.i.

⁷³ See Epic's Proposed Injunction, II.B.1.ii.

process and/or are known malware.⁷⁴

56. The States' Settlement addresses the main issues related to Android security features that were identified at trial, including the unknown sources setting and sideloading warnings. The States' Settlement combines and simplifies the two key sideloading screens, specifies neutral language for this screen,⁷⁵ eliminates the need for a user to actively navigate to a separate settings screen in order to be able to complete a download,⁷⁶ and requires Google to implement technology that allows seamless updating of apps from sideloaded third-party app stores.⁷⁷ The States' Settlement also provides that Google does not "limit or control the unilateral discretion of any OEM to decide how it configures its Mobile Devices."⁷⁸
57. Epic's proposed remedy goes much further in at least the following ways:
 - a. It prohibits *any* conduct that even *disincentivizes* downloads through any alternative app distribution channel, potentially including conduct that simply increases the value users get when they download an app through Play, or provides users with accurate information about known or emerging security and privacy risks.⁷⁹
 - b. It prohibits Google from blocking or imposing "frictions" on any app—including apps that Google deems to be high-risk—unless that friction is included in Play, the app's developer has explicitly declined to subject the app to a "generally available, distribution-channel-agnostic notarization-like process," or the app is already known to be malware.⁸⁰
 - c. It requires Google to implement "friction" in Play commensurate with that imposed on installation from alternative Android app distribution channels regardless of whether Google, an OEM, or a carrier implemented the "friction."⁸¹
58. Epic's proposed remedies would significantly undermine security. Evidence shows that the security risks associated with apps downloaded from sources outside of Play are substantial.⁸² Malware and other harmful downloads are far more likely to appear on

⁷⁴ See Epic's Proposed Injunction, II.B.2.ii.

⁷⁵ See States' Settlement, § 6.10.1.

⁷⁶ See States' Settlement, § 6.10.1.

⁷⁷ See States' Settlement, § 6.9.

⁷⁸ States' Settlement, § 15.2.

⁷⁹ Epic's Proposed Injunction, II.B.1.

⁸⁰ Epic's Proposed Injunction, II.B.1.iii and II.B.2.ii.

⁸¹ Epic's Proposed Injunction, II.B.1.iii.

⁸² Qian Trial Testimony, 2230:25-2232:8 ("Q. Does academic research conclude that sideloading is risky? A.

devices with apps from sources outside of Play than on devices with only Play apps installed.⁸³ Dr. Qian showed that, from 2019 to 2021, the incidence of devices affected by mobile unwanted software is 1.5 to 2.7 times higher for devices that installed apps from sources outside of Play compared to devices with apps only from Play.⁸⁴ Dr. Qian also showed that, from 2017 to 2020, devices worldwide (excluding China) that installed apps through alternative channels were 3.2 to 9.8 times more likely to have potentially harmful applications (“PHAs”) compared to devices that installed apps from Play only.⁸⁵ PHAs are “apps that could put users, user data, or devices at risk” and are often referred to generically as “malware.”⁸⁶

59. Despite these differential risks for apps downloaded from sources outside of, or within Play, Dr. Bernheim does not provide any explanation or evidence for why Play should be treated essentially the same, from a security perspective, as direct downloading from the internet or any store downloaded from the internet. Nor does Dr. Bernheim provide any evidence that users will be equally safe, as compared to today, if Epic’s proposed injunction were adopted.
60. Further, Dr. Bernheim is mistaken in claiming that “[u]nder this provision, Google is free to determine the security measures most appropriate for protecting the integrity of Android,” that the provision “explicitly allows Google to protect users by providing legitimate security warnings,” and that it “will not degrade or otherwise change the

Yes. Q. And is there a consensus on this point? A. Yes...A. Well, in this case after the Fortnite installer app has been sideloaded successfully through the browser app, we see that it generates a warning to the users saying that, ‘Oh, your browser has been granted the sideloading permission and please now disable it’...it means that there is general consensus, you know, even from Epic, that sideloading is risky.”).

⁸³ Qian Trial Testimony, 2230:11-24 (“Q. But is Google Play Store a relatively safe place for apps? A. Yes, because they have...lower malware rate compared to other app stores or sideloading channels. Q. Are all sideloaded apps reviewed for malware? A. No. Q. And how does that difference affect the risk of sideloading as compared to downloading from the Google Play Store? A. Well, that means by design, sideloaded apps would have a higher chance of being malware because if they’re not reviewed by any entity, then it’s very likely -- you know, it’s likely that some of them would be malware and nobody would have caught them.”).

⁸⁴ Expert Report of Zhiyun Qian, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 18, 2022 (“Qian Report”), ¶ 141. *See also* Qian Trial Testimony, 2230:11-24 (“Q. But is Google Play Store a relatively safe place for apps? A. Yes, because they have...lower malware rate compared to other app stores or sideloading channels. Q. Are all sideloaded apps reviewed for malware? A. No. Q. And how does that difference affect the risk of sideloading as compared to downloading from the Google Play Store? A. Well, that means by design, sideloaded apps would have a higher chance of being malware because if they’re not reviewed by any entity, then it’s very likely -- you know, it’s likely that some of them would be malware and nobody would have caught them.”).

⁸⁵ Qian Report, ¶ 137, Figure 6.

⁸⁶ “Potentially Harmful Applications (PHAs),” *Google for Developers*, November 12, 2019, <https://developers.google.com/android/play-protect/potentially-harmful-applications>, accessed April 10, 2024.

functionality of the Google Play Store.”⁸⁷ To the contrary, Epic’s proposed injunction severely constrains the specific security measures that Google may use, and it would undermine security in at least four ways.

61. First, the prohibition on “disincentivizing” sideloading would prevent Google from providing accurate information to users about security risks. For example, informing a user that enabling sideloading increases the risk of malware could reduce the user’s incentive to sideload.
62. Second, the proposed remedy would prevent Google from using the full range of signals available to identify, block, and/or warn users about potentially harmful apps or app stores. Any app or app store that had at some point been submitted to any “notarization-like process” would become immune from additional security warnings or safeguards, even if the notarization-like process was known to be imperfect or unreliable, the app or app store had been modified since it was submitted to that process, and/or the app had a combination of features including its source, developer characteristics, code features, and pattern of past behavior that indicated it could pose a significant risk. The only exception would be if it was “known” to be malware. Google would furthermore be prohibited from using the source of an app as a predictor of its security risks.
63. Third, the proposed remedy appears to require that the install flow for downloading apps from the open web using a browser such as Google Chrome or Microsoft Edge be limited to a “single one-tap screen” with “neutral language” asking the user to confirm an app installation, or otherwise be “commensurate” with the installation process for apps from Play.⁸⁸ Major browsers, including Google’s Chrome browser and Microsoft’s Edge browser, provide users with a security warning prompt at the time of download.⁸⁹ Dr. Mickens testified in his deposition that these browser warnings are reasonable and that he was not proposing removing them.⁹⁰ The proposed injunction appears to require that

⁸⁷ Bernheim Statement, ¶ 55.

⁸⁸ Epic’s Proposed Injunction, II.B.1-2.

⁸⁹ “Google Chrome Blocks Some Downloads,” *Google Chrome Help*, <https://support.google.com/chrome/answer/6261569?hl=en>, accessed April 10, 2024 (“Chrome automatically blocks dangerous downloads and protects your device and accounts from malware or viruses. ... You can always choose to download a file after you receive a warning from Chrome, but take download warnings seriously.”); “Microsoft Edge Support for Microsoft Defender SmartScreen,” *Microsoft Learn*, January 12, 2024, <https://learn.microsoft.com/en-us/deployedge/microsoft-edge-security-smartscreen>, accessed April 10, 2024 (“Microsoft Defender SmartScreen determines whether a downloaded app or app installer is potentially malicious based on many criteria Files with a known safe reputation will download without any notification. Files with a known malicious reputation show a warning to let the user know that the file is unsafe and has been reported as malicious.... Files that are unknown show a warning to let the user know that the download doesn’t have a known footprint and advise caution ... Not all unknown programs are malicious, and the unknown warning is intended to provide context and guidance for users who need it[.]”).

⁹⁰ Deposition of James Mickens, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, March 22, 2023, 162:12-164:4 (“Q. Do you think it was a good design decision for browser vendors to include the

Google remove such warnings from Google’s Chrome browser, which is inconsistent with Epic’s own expert’s opinions, and would prevent Google from displaying warnings that communicate to users the risks of installing apps from the open web, such as websites that falsely purport to have legitimate apps.

64. Fourth, the proposed remedy would limit how OEMs could compete with each other on security by forcing all OEMs to the lowest common denominator. OEMs have the flexibility to customize security features on Android.⁹¹ Restricting OEMs’ ability to enact more stringent prompts than the defaults would limit OEMs’ ability to compete on security.
65. The economic impact of the proposed remedy would hinge on the details of the “generally available, distribution-channel-agnostic notarization-like process” that would be left as the sole mechanism for protecting Android users from harmful apps.⁹² What this process or processes would be, who would provide them, what standards they would have to meet, how they would be monitored, and so on are all left completely unspecified. These details would presumably have to be filled in and overseen by the Court.
66. Even if those details were specified, the versions of notarization that Epic proposed at trial—centralized and decentralized notarization—would bring additional security risks that Dr. Bernheim has not addressed.⁹³

warning we see in step 2? A. It’s reasonable to the extent that the downloading of an APK file is sort of different in terms of ramifications than the downloading of a picture let’s say. Q. So you do think it was a good design decision for browser vendors to include this warning; right? A. Well, I think that in this case, there is a decision that browser makers are making here with respect to the potential risk of an action....So to the extent that this warning is actually commensurate with risk, it’s a good idea.”); 304:4-305:7 (“Q. By virtue of the fact the browser has permission to install apps, you would entirely dispense with any warning from the operating system informing the user that they are about to install an app; is that right? A... So, for example, if you’re particularly worried about, for whatever reason, a particular installer app accidentally triggering an installation flow, that type of screen could be added.”).

⁹¹ Declaration of David Kleidermacher in Support of Google’s Objections to Proposed Injunction, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, May 1, 2024 (“Kleidermacher Declaration”), ¶ 11 (“Android OEMs also have the ability to innovate on security issues and safeguard their users from sideloading risks. To the extent that Epic’s proposed injunction applies to OEMs, it would prevent OEMs from providing users with additional security features and protections.”).

⁹² Epic’s Proposed Injunction, II.B.2.ii.

⁹³ Qian Trial Testimony, 2240:20-2241:2 (“Q. What was your overall conclusion based on the information that Professor Mickens provided? A... [A]fter some careful analysis, I’ve arrived at the conclusion that the proposals are less flexible, would introduce new security risks, and impose burden on Google”); 2242:10-17 (“Q. Now, would implementing centralized notarization be a significant change in the design of the Android operating system? A. Yes, it would be a significant change...[t]here’s actually profound ramifications on the entire Android ecosystem on all the stakeholders. Right? It doesn’t just affect Google. It affects also the OEMs, the users, and developers.”); 2244:15-2246:1 (“Q. And, Professor Qian, are there security risks associated with this proposal of centralized notarization?... A. ... First, it’s possible that after an app has been approved it’s going to turn malicious at a later point in time...if Google has previously approved an app, generated a token for that app, it doesn’t mean that app is going to be safe forever...Google would have to

67. Providing a notarization service would be costly.⁹⁴ Economic principles imply that Google would charge a price for that service in a competitive market and that this would enhance efficiency. Dr. Mickens, Epic's security expert, acknowledged that Google could charge for its services.⁹⁵
68. If Google were asked to provide a service like this to developers without charge, it would essentially be required to offer for free the core security screening and verification services of Play, and to put its own reputation on the line. This would allow another form of free riding that would substantially undermine the Android platform as discussed in **Section II** above.
69. As security is a key dimension on which Apple and Google compete, requiring Google to enact a notarization system which lowers security on Android devices puts Android at a competitive disadvantage relative to iOS.⁹⁶
70. Finally, Epic's proposal would force the Court into micromanaging Android's security paradigm. The Court would need to determine who would be responsible for providing the "generally available, distribution-agnostic notarization-like process" Epic discusses in its Proposed Injunction and would need to answer many questions in implementing this remedy.⁹⁷ What standards would such a notarization process need to meet? Will the notarization entity be allowed to charge for its services? How will the price for the notarization process be determined? How will the price be adjusted over time? Will the

continuously monitor all of the apps that it has previously reviewed and approved, including apps that are within the Google Play Store and outside of the Google Play Store); 2248:9-17 ("Q. Would decentralized notarization lead to overall lower security than today? ...A. Yes...I can talk about two issues here. One, it's what's called race to the bottom...and, two, there is an increased risk of stolen keys when you have multiple reviewing entities.").

⁹⁴ Kleidermacher Declaration, ¶¶ 23-24 ("a basic notarization system would cost at least tens of millions of dollars per year to operate, and likely over \$100 million per year, and even at that level of spending the system would not provide the same degree of safety as the app review process employed by the Play store today. Building such a system would also take a significant amount of time and could not realistically be implemented in a few months...And to the extent that this review process requires human review to provide adequate security assurances, Google would need to employ additional security analysts to review apps distributed outside the Play store.").

⁹⁵ Trial Testimony of James Williamson Mickens, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 21, 2023 ("Mickens Trial Testimony"), 2175:7-17 ("Q. Right. In your proposal, Google could choose to charge for app review based on an app's size; correct? A. It could. That's a thing that could happen...Q. And, similarly, under your proposal, Google could even charge a developer a percentage of the revenue earned by the app; right? A. That's a thing that could happen from the technical perspective, yes.").

⁹⁶ Mickens Trial Testimony, 2207:14-25 ("Q. And you were asked whether Apple and Google compete. Do you recall that? A. I do. Q. What do you understand that term to mean in the context of your testimony here? A. So I'm not an economist and so, you know, I can't talk about what competition means in the antitrust sense. My understanding as a security expert and an engineer is that both Apple and Google, they, you know, have engineers they have security people who are working on adding various features to their phone. And so there's sort of like a technical rivalry there, a technical competition.").

⁹⁷ Epic's Proposed Injunction, II.B.2.ii.

responsible entity be forced to notarize all the apps submitted for notarization, or can it have discretion related to which apps—and apps from which developer—it does and does not notarize? Who will oversee the notarization work and ensure that it meets a minimum quality standard? Who will revise standards and prohibitions as the security landscape rapidly evolves, and will this guidance be subject to regular revision to account for this?

71. Dr. Bernheim contends that all of these provisions are necessary because the States' Settlement (i) fails to restrict Google from "technologically hinder[ing] off-Play distribution channels," (ii) provides latitude with regards to "security and privacy" that is not appropriate, (iii) includes only certain Android versions, and (iv) limits the remedy to four years.⁹⁸
72. With regards to (i), Dr. Bernheim's contention that the States' Settlement does not sufficiently prevent technological hindering of off-Play distribution is based on his stated principle that "warnings should not discriminate among apps based on the app store from which users download them, or discriminate against stores based on whether they are pre-loaded or obtained from the web."⁹⁹ Dr. Bernheim presents no economic basis for this principle nor does he address the security, privacy, and user choice issues it raises that I summarize above.
73. With regard to (ii)-(iv), Dr. Bernheim fails to articulate a way to determine the appropriate latitude, scope, or terms of the security provisions. Dr. Bernheim does not explain why it is necessary—or even whether it is feasible¹⁰⁰—for the remedy to apply to older / deprecated versions of Android, nor does he address whether the benefits would be commensurate with the cost of doing so.

E. Access to Android and Other Google Products or Services (II.C)

74. Under Epic's Proposed Injunction, Google would be prohibited from entering into agreements that deny or impede any "Alternative Android App Distribution Channel" or any Android app downloaded from such a channel from access to functionality or features in Android, Google's proprietary APIs, or Google Mobile Services that is enjoyed by non-

⁹⁸ Bernheim Statement, ¶ 32.

⁹⁹ Bernheim Statement, ¶ 20. Dr. Bernheim's specific contention is that in terms of "preventing Google from 'imposing frictions on 'off-Play' app installations' ... the States' remedy falls short of the Proposed Injunction's requirements concerning parity for off-Play installations, which could allow Google to technologically hinder off-Play distribution channels." Bernheim Statement, ¶ 32.

¹⁰⁰ See Kleidermacher Declaration, ¶ 41 ("Once a final version of Android has been publicly released, Google does not typically update old versions of Android other than to release critical security patches. This is important because changing the functionality of old versions of Android can cause apps to unexpectedly malfunction if developers did not build their apps to anticipate the new changes. Google also does not have any mechanism to force updates to old versions of Android because OEMs control the availability of updates on their devices.").

Google apps downloaded through Play.¹⁰¹ Google also would be prohibited from entering into agreements that impede, restrict or condition access to Google’s products or services—other than Google Play Billing (“GPB”) services—on the basis of a developer’s actual or intended use of any “Alternative Android App Distribution Channel.”¹⁰²

75. This proposed remedy was not addressed in the States’ Settlement.
76. Dr. Bernheim acknowledges that these provisions “go[] beyond prohibiting the conduct the jury deemed illegal at trial,” but claims they are designed to “ensure that Google does not undermine the remedy” by limiting apps’ access to key Android functionalities or Google products/services based on their distribution channel.¹⁰³
77. These proposed terms would require Google to give developers free access to valuable functionalities and features resulting from Google’s investments in developing Android and Play. It would impose this requirement for any functionalities or features that Google makes available to any non-Google apps downloaded through Play. Allowing developers to access all such features and functionalities for free would diminish Google’s incentive to continue to invest.¹⁰⁴
78. For example, Google currently offers two versions of its location services API: (i) an open-source version that is free and available for anyone to use (including non-GMS devices), and (ii) a proprietary closed-source, improved version—only available on GSM devices—that combines on-device signals with Google data to determine device location with more accuracy and less battery drain.¹⁰⁵ Under Epic’s Proposed Injunction, Google could be

¹⁰¹ See Epic’s Proposed Injunction, II.C.1.

¹⁰² See Epic’s Proposed Injunction, II.C.2.

¹⁰³ Bernheim Statement, ¶¶ 58, 60.

¹⁰⁴ Pindyck, Robert S., and Daniel L. Rubinfeld, *Microeconomics*, 8th Ed., Pearson, 2013, at p. 693 (“[T]he presence of free riders makes it difficult or impossible for markets to provide goods efficiently.”). See also Bernheim Amex Trial Testimony, 6427:2-6427:6 (“If there is free-riding on investment, the first party doesn’t have the incentive to make the investment to begin with, or has a reduced incentive and makes the investment at a lower level. As a result, possible benefits are lost.”); Hubbard, R. Glenn, and Anthony P. O’Brien, *Microeconomics*, 7th Ed., Pearson, 2019, at p. 179 (“Private firms are usually not willing to supply public goods because of free riding.”); Mankiw, N. Gregory, *Principles of Economics*, 6th Ed., South-Western Cengage Learning, 2012, at p. 221 (“Profit-seeking firms spend a lot on research trying to develop new products that they can patent and sell, but they do not spend much on basic research. Their incentive, instead, is to free ride on the general knowledge created by others.”).

¹⁰⁵ Declaration of Kurt Williams in Support of Google’s Objections to Proposed Injunction, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, May 2, 2024 (“Williams Declaration”), ¶ 5 (“Play services includes an API called FusedLocationProvider that makes it easier for developers to determine a user’s location in tricky environments, such as dense urban centers where tall buildings interfere with traditional GPS data. To solve this problem, Google has invested in advanced 3D imaging of cities and maps of known WiFi network locations. Google continuously maintains this data, and can then combine it with information from a user’s device to determine a more accurate location.”); Van Diggelen, Frank, and Jennifer Wang, “Improving Urban GPS Accuracy for Your App,” *Android Developers Blog*, December 7, 2020,

required to make its proprietary version of its location services API available for free on non-GMS devices. Thus, other platforms would be allowed to free ride on Google's investments in GMS devices.

79. Similar to Epic's proposal to share Play's apps with other app stores (which I discuss further below), requiring Google to share all features and functionalities developed for apps in Play will harm competition by preventing Google from engaging in competition on the merits. Other app stores could offer exclusive or differentiated APIs and services to their apps, but Google could not compete by offering exclusive or differentiated features to developers to attract them to and/or retain them on Play.
80. In addition to its adverse economic consequences, this proposed remedy would raise substantial practical issues in implementation. For example, certain APIs offer functionality that relies on an app having been downloaded from Play, such as the SafetyNet API that determines whether an app on the user's device has been modified since it was downloaded from Play.¹⁰⁶ Such APIs would not function with non-Play app stores. Epic's proposal also requires that Google provide access to proprietary, closed-source APIs if an API provides functionality that is "traditionally part of an operating system or platform." It is not clear how Epic intends the Court to determine on an ongoing basis which features or functionalities are traditionally part of an operating system or platform and which may be fairly considered separate. This is especially complicated by the significant degree to which operating systems have evolved over time to provide functionality that was previously provided only by third-party software.¹⁰⁷
81. Similarly, it is unclear how and in what circumstances Google could charge for access to its APIs. As explained in **Section II**, regulating these prices or preventing Google from earning a return on its investments in developing APIs could harm consumers.

F. Catalog Access and Library Porting (II.D.1)

82. Under Epic's Proposed Injunction, for a period of 6 years, Google would be required to (i) provide third-party app stores access to Play's app catalog via an API that allows all Play apps to be viewable in the third-party app store and fulfills download requests made

<https://android-developers.googleblog.com/2020/12/improving-urban-gps-accuracy-for-your.html>, accessed April 23, 2024 ("the latest improvements to the Fused Location Provider API...improve[] battery life.").

¹⁰⁶ Williams Declaration, ¶ 8. *See also*, Williams Declaration ¶ 9 for an example of an API that relies upon the user having a Google account, which may not be required by other app stores.

¹⁰⁷ As an early example of this trend, prior to 2013 the ability to turn on/off the iPhone camera flash for use as a flashlight was only provided by third-party apps. In 2013, this functionality became part of iOS 7. Gallagher, William, "Flashlight on iPhone – Everything You Need to Know," *AppleInsider*, January 15, 2021, <https://appleinsider.com/articles/21/01/15/flashlight-on-iphone---everything-you-need-to-know>, accessed April 30, 2024.

by users of the third-party store (“catalog access”);¹⁰⁸ and (ii) provide users with the ability to share a list of apps installed by Play on a user’s device and provide users the ability to change ownership of those apps to a third-party app store, subject to a one-time user permission (“library porting”).¹⁰⁹ Once ownership for an app has been transferred, the third-party app store will obtain the subsequent service fee revenue associated with that app.¹¹⁰

83. Epic’s experts did not argue at trial that it is anticompetitive for Google not to provide catalog access and library porting. These proposed remedies were not part of the States’ Settlement.
84. Dr. Bernheim contends that catalog access “provides rival app stores with immediate scale on the developer side, allowing them to compete for users on the merits without confronting a chicken-and-egg problem.” He claims this will in some manner encourage rival app stores to develop relationships with OEMs, and attract developers to the app store “as it builds its user base.”¹¹¹ With respect to library porting, Dr. Bernheim states that rival app stores can “choose to incentivize” developers to port update privileges to the rival app store and the “resulting competition between Google Play and its rivals will directly benefit users.”¹¹² He acknowledges that “this provision goes beyond prohibiting the specific conduct, or substantially similar conduct, that was at issue in the trial, in order to counter the persistent impact of Google’s past anticompetitive conduct.”¹¹³
85. In **Section II** above, I discuss why I believe these claims are incorrect as a matter of economic principle, and why I disagree that it is necessary to actively restructure the market in order “reestablish an even playing field.” I note that Dr. Bernheim has testified that “the best strategy for overcoming network externalities is to offer distinctive content not available on the Google Play Store,”¹¹⁴ and that Epic itself has argued that it successfully used this strategy to enter and compete with Steam and other established game distributors on PCs.¹¹⁵ In this section, I focus on the details of the proposed catalog access and library porting remedies.

¹⁰⁸ See Epic’s Proposed Injunction, II.D.1.i.

¹⁰⁹ See Epic’s Proposed Injunction, II.D.1.ii.

¹¹⁰ See Epic’s Proposed Injunction, II.D.1.

¹¹¹ Bernheim Statement, ¶¶ 63-64.

¹¹² Bernheim Statement, ¶ 64.

¹¹³ Bernheim Statement, ¶ 68.

¹¹⁴ Bernheim Statement, ¶ 48. *See also* Bernheim Statement, ¶ 13.

¹¹⁵ Allison Trial Testimony, 230:17-233:9 (“Q... Did Epic use any other strategies to grow the store? A... it was really important for us to get important games and strategic partnerships that players would be excited about exclusively for a timed exclusive period... consoles have used timed exclusives as a business strategy to

86. From an economic point of view, catalog access is not necessary for competition because third-party app stores are already free to compete to offer any app that is offered in Play. Third-party app stores can compete to attract Android app developers by offering a high-quality app store at an attractive price. Developers benefit from this competition among app stores.
87. The proposed catalog access and library porting remedies would threaten these benefits because they would allow third-party app stores to obtain access to millions of apps without having to offer the developers of those apps more value. Developers that are not offered those deals will be harmed by this lack of competition. Fewer incentives and less co-investment offered to developers could degrade the overall quality of apps. Although competing app stores may still have incentives to attract certain developers of high-revenue apps in order to capture service fee revenue, these incentives will not extend to the large number of free and low-revenue apps that constitute the vast majority of apps that would be covered by catalog access and library porting. These apps collectively provide substantial value to users, and under the proposed remedy, competing app stores would have weakened incentives to attract the developers of these apps.
88. Developers would suffer further harm from losing control over the distribution of their apps. A developer that agrees to put its apps on Play may not want to have its apps appear on a potentially less reputable storefront (e.g., next to gambling or pornography apps), or in a store that provides a lower-quality experience for users. For example, GetJar, an alternative app store, lists several suspicious apps that contain hacking tools such as “WhatsApp Hack Tool” or “PUBG Mobile Hack” alongside seemingly reputable apps.¹¹⁶ Another app store, APKPure, states that all its APK files are the same as the ones on Play, but the app store allows users to download older app versions that can compromise privacy

grow their platforms as well for decades, and we had never seen that in PC. So we also decided to pursue a very similar strategy.”); Dingman, Hayden, “A Year in, the Epic Games Store’s Fight Against Steam has Made PC Gaming Better For Everyone,” *PCWorld*, December 6, 2019, <https://www.pcworld.com/article/398473/a-year-in-the-epic-games-stores-fight-against-steam-has-made-all-pc-gaming-better.html>, accessed April 21, 2024 (“In 2019 ... Epic shelled out a ton of money for timed exclusives. Good ones, too!”); Statt, Nick, “Epic vs. Steam: the Console War Reimagined on the PC,” *The Verge*, April 16, 2019, <https://www.theverge.com/2019/4/16/18334865/epic-games-store-versus-steam-valve-pc-gaming-console-war-reimagined>, accessed April 21, 2024 (“Sweeney says the company will continue this strategy [of securing exclusive titles for its store], either until Epic’s store becomes popular enough to stand on its own or Valve acquiesces to more developer-friendly terms.”).

¹¹⁶ Christian Cawley, “Avoid GetJar! Thousands of Free Mobile Apps With the Risk of Malware,” *MakeUseOf*, February 18, 2020, <https://www.makeuseof.com/tag/getjar-thousands-free-apps-mobile-phone/>, accessed April 10, 2024 (“it’s home to plenty of unpopular, out of date, and downright suspicious apps, too... GetJar isn’t as reliable as the Play Store or other alternatives because of the following issues: Apps are of unreliable origin[;] GetJar lists hacking tools[;] ... Risk of malware and ransomware[;] For every Facebook Lite, there’s a ‘WhatsApp Hack Tool’ or a ‘PUBG Mobile Hack.’ ... Google Play is a safe, trusted library of software for your mobile device. GetJar is not.”). The GetJar app store also includes apps with lewd or profane content. *See, e.g.*, “Find the Best Banned APK Mobile Android Apps and Games Below,” *GetJar*, <https://www.getjar.com/tag/Banned/>, accessed April 10, 2024.

and security.¹¹⁷ Some app stores permit apps with adult content.¹¹⁸ Under the proposed remedy, a developer's app could potentially appear in these or other storefronts without the developer's knowledge or consent. If developers lose control of their apps on Android and cannot have a say on where they appear, that may lead them to deprioritize investments in Android, to the benefit of Apple. Moreover, when agreeing to the DDA, developers select the countries where their apps should be distributed, and could face regulatory issues (e.g., tax compliance) if their apps are distributed elsewhere by third-party app stores.¹¹⁹ An app developer may prefer to limit access to its apps to protect its reputation, and to avoid the cost of managing multiple distribution channels.

89. Reduced competition would also harm users. App stores would have weakened incentives to offer better prices, quality, and features for users because they would not need to attract more users in order to attract more developers.
90. Finally, the proposed catalog access remedy would enable a textbook example of free riding: competing app stores could effectively offer clones of Google's own catalog rather

¹¹⁷ Joshua, Crissy, "A Guide to APKPure: Is It Legal and Is It Safe?," *Avast*, September 22, 2023, <https://www.avast.com/c-is-apkpure-safe>, accessed April 10, 2024 ("Downloading older versions that are available on APKPure can be risky because older app versions can have outdated defense mechanisms against online threats, or specific vulnerabilities in their code that could allow hackers access to your phone... anyone can download age-restricted apps on APKPure....Some age-restricted apps also come equipped with online tracking to target users with specific ads that aren't appropriate for children."); "About Us," *APKPure*, <https://apkpure.com/about.html>, accessed April 10, 2024. Additionally, while APKPure claims that its apps have been scanned by Google and are completely safe, APKPure was infected with a trojan malware in 2021 that could show ads on users' devices, collect device information, and download other malware. Golovin, Igor, "Infected Android App Store," *Kaspersky*, April 9, 2021, <https://www.kaspersky.com/blog/infected-apkpure/39273/>, accessed April 10, 2024.

¹¹⁸ Trial Testimony of Steven Allison, *In Epic Games, Inc. v. Apple Inc.*, 4:20-cv-05640, May 7, 2021 ("Allison Apple Trial Testimony"), 1257:18-1258:7 ("Q. ... There are many games on Itch.io. I won't even read the names out loud. A. Okay. Q. But they are both offensive and sexualized. You're not aware of that? A. Itch.io is an app store that is not the Epic Games Store. We are not distributing -- Itch is distributing Itch.io's games. Epic is only distributing the app store Itch.io. Q. And Itch.io is now available as an app on the Epic Games Store; correct? A. Correct. Q. And those apps in Itch.io have not gone through any review process whatsoever; correct? A. They are subject to whatever process Itch.io puts in front of their developers.").

¹¹⁹ For example, in certain countries, taxes must be included in the price shown to consumers who wish to make in-app purchases, but that is not the case in other countries. These differences in taxation laws could lead to tax compliance issues for developers if their apps are copied without their consent to third-party app stores used in other jurisdictions with different taxation regulation. "Tax Rates and Value-Added Tax (VAT)," *Play Console Help*, https://support.google.com/googleplay/android-developer/answer/138000?hl=en&ref_topic=3452890&sjid=14852023290812909701-NA, accessed April 10, 2024 ("In some countries, prices shown to buyers on search and detail pages must equal the amount paid at the time of payment. This means that all taxes (including VAT) must be included in the price."). *See also* "Requirements for Distributing Apps in Specific Countries/Regions," *Play Console Help*, <https://support.google.com/googleplay/android-developer/answer/6223646?hl=en>, accessed April 10, 2024, which explains country-specific information related to distribution (e.g., developers distributing apps in Japan must notify the Japanese authorities if they are to deliver a game that will be billed in Japan in accordance with the Payments Services Act in that country: "you are required to comply with all applicable laws in Japan (for example, the Payment Services Act) when distributing apps in Japan.").

than investing or competing to develop their own.¹²⁰ A competing app store could offer its consumers the full catalog of Play apps (3.33 million apps as of April 2024),¹²¹ benefitting from Play’s security screening and verification, Play’s download and update functionality, Play’s developer relationships, and other Play features and functions.

91. Although Google would continue to obtain service fee revenue from some of these apps, it would be providing its competitors with the benefits of being able to offer the apps to users and guarantee them a comprehensive, high-quality catalog without receiving any compensation from those competitors in return. Moreover, it would receive no revenue from the vast majority of apps that would be shared through catalog access because those apps do not monetize through download fees or in-app purchases. Finally, as discussed below, it would lose all revenue from apps shared through this remedy when ownership of them is changed through library porting.
92. The proposed remedy would be analogous to requiring Walmart to allow other local retailers to offer their customers any product that Walmart stocks, offering those retailers full access to Walmart’s internal supply-chain data, and requiring Walmart to process and ship any orders consumers place for Walmart products at Walmart’s competitors. As discussed in **Section II**, free riding of this kind undermines competitive markets because it reduces the incentives of all market participants to invest and innovate.
93. Implementation of the proposed catalog remedy in a way that addresses privacy and security issues as well as developers’ lack of control is challenging. What technical conditions would the catalog access mechanism that Google would provide need to satisfy? How much control will developers have over where their apps appear? What recourse will app stores have if they are unsatisfied with this mechanism or if they encounter technical problems? What standards will Google be able to impose on third-party app stores that wish to display its catalog listings and use its brand name? What steps will Google be allowed to take to protect users’ security? If the conditions that Google can set in its agreements with competing app stores are determined by the Court, how will these agreements be monitored? How will these conditions evolve in the face of changing technology?
94. The library porting provision of Epic’s proposed remedy would allow users to provide any third-party app store a full list of apps installed by Play on a user’s device and allow these app stores to take control of updating these apps subject only to a single, one-time permission from the user, provided that the apps are listed on that app store. The proposed remedy does not envision Google having the ability to impose any limitations on which

¹²⁰ See, e.g., Mankiw, N. Gregory, *Principles of Economics*, 6th Ed., South-Western Cengage Learning, 2012, at p. 220 (“free rider[:] a person who receives the benefit of a good but avoids paying for it.”).

¹²¹ “Google Play vs the Apple App Store: App Stats and Trends,” *42matters*, April 9, 2024, <https://42matters.com/stats>, accessed April 10, 2024.

stores it would share this user information with, nor does it specify what if any conditions Google may impose on library porting or how visible or reversible the decision to switch app stores would be to a user. This could harm users in at least three ways.

95. First, library porting would risk undermining the security and functionality of apps, for example through reduced updating. Developers update their apps for many reasons, including to address potential security issues or fix bugs. If some apps originally downloaded from Play—and taken over by other app stores as a result of the library porting provision—are not updated as regularly as they would be on Play, then their security and functionality will be compromised.
96. Second, library porting would risk substantial confusion for users by making it difficult to determine which apps are being controlled or updated by which stores. A user of an app who wishes to check for updates, diagnose a problem, or understand unexpected behavior may be confused or frustrated if they cannot determine which store is in control.
97. Third, sharing information on the catalog of apps installed on a device with all app stores would undermine user privacy. For example, such a list could reveal information to an app store about a user's health or sexual orientation, and that information might in turn be shared to other third parties without the user's consent. While users anticipate that this information in the set of apps they download is visible to Google, they may not recognize that it is also visible to any third-party app store they choose to download and install.
98. Library porting would also enable egregious free riding. Epic's proposal transfers service revenue to third-party app stores that have taken over app update privileges: a store that entices a user to port a set of apps would capture the full revenue stream from those apps even though the user's discovery, evaluation, and download of the apps relied on a higher-quality store. Third-party stores might seek to gain control of the highest-revenue apps users had discovered through Play, while leaving Google to pay the cost of maintaining and updating free or low-revenue apps. This kind of free riding would not only produce the usual harms such as reduced investment and innovation, but it would give app stores enormous incentives to convince users to click a button that would hand over the app store ownership of their most lucrative apps, and could lead to a barrage of pop-ups, notifications, and offers, including many that might be highly deceptive. Stores would compete to capture the revenue from apps downloaded from Play rather than competing to offer users and developers a higher quality store of their own. That would harm users by degrading their experience.
99. As with the catalog access proposal, the library porting proposal also raises many questions in implementation: What information would be provided by a third-party app store to the user, when the user is asked to choose whether the ownership of their Play-downloaded app could be taken over by the third-party app store? If the user accepts a change of ownership, will they be able to switch back to Play at a later date? If so, when and how can Play prompt them to do so? If developers opt to delist from third-party app

stores can ownership of the app be passed back to Play or would users be forced to re-install the apps? The Court would also need to answer questions regarding any mechanism for developers to choose whether the ownership of their apps could be changed, including any recourse they may have if they are unsatisfied with the treatment of their apps by the third-party app store.

G. Distribution of Third-Party App Stores on Play (II.D.2)

100. Under Epic’s Proposed Injunction, for a period of 6 years, Google would be required to allow distribution of competing third-party app stores on Play.¹²²
101. This proposed remedy does not address any conduct challenged or identified as anticompetitive by Epic’s experts at trial, and as recognized by Dr. Bernheim “the Court ruled that Google [is] not obligated as a matter of antitrust law to carry other app stores on Google Play.”¹²³ This proposed remedy was not directly addressed in the States’ Settlement, although provisions in the States’ Settlement promote the preinstallation and distribution of third-party app stores outside Play.¹²⁴
102. Dr. Bernheim states that “this provision goes beyond prohibiting the specific conduct, or substantially similar conduct, that was at issue in the trial, in order to counter the persistent impact of Google’s past anticompetitive conduct”¹²⁵ Dr. Bernheim claims that this provision is necessary given that “[i]f third-party app stores were not available through Google Play, many users would not know where to find them or even to look for them at all” which will assist in competition for users.¹²⁶
103. This proposed remedy would harm consumers in several ways. First, it carries substantial security risks for users. Academic research indicates that alternative app stores can be a significant vector of malware.¹²⁷ Play provides value to users in part by providing an assurance that an app downloaded through Play has been screened for security. Such

¹²² See Epic’s Proposed Injunction, II.D.2.

¹²³ Bernheim Statement, ¶ 68.

¹²⁴ See States’ Settlement, §§ 6.6, 6.7, 6.8, 6.9.1, and 6.9.2.

¹²⁵ Bernheim Statement, ¶ 68.

¹²⁶ Bernheim Statement, ¶ 67.

¹²⁷ See, e.g., Kotzias, Platon, *et al.*, “How Did That Get In My Phone? Unwanted App Distribution on Android Devices,” *2021 IEEE Symposium on Security and Privacy*, 2021, pp. 53-69, at p. 62 (“We observe significant differences in [installer detection ratio (IDR), i.e., the fraction of unwanted APKs installed over the total number of APKs installed] for different markets. The highest IDR of 11.7% is for the Huawei ... followed by the Iranian Bazaar market ... with 10.5%, the Iranian MyKet market ... with 4.4%, the NearMe market from Chinese vendor Oppo ... with 2.8%, and the 9Apps Indian market ... with 1.6% IDR. On the better side of the spectrum, there are the Play market and Amazon’s market with the lowest IDRs of 0.6% and 0.7% respectively.”).

screening is likely to become less effective or trustworthy if an app can download, install, and modify additional software that has not gone through this screening process. Dr. Qian explained at trial that it would be difficult for Google to assess the security risks associated with apps that a particular app store might at some point make available because any process will inherently be reactive as Google does not have immediate access to apps from alternative app stores.¹²⁸

104. Second, under the proposed remedy, Google could be forced to distribute app stores that in turn distribute content (e.g., pornography) that violate Google’s content restrictions. During the *Epic v. Apple* trial, it was revealed that the itch.io app store distributed through the Epic Games Store contains adult content which the Epic Games Store is not responsible for reviewing.¹²⁹ Another example is Tencent MyApp where users can download third-party app stores such as 360 Mobile Assistant, Baidu Mobile Assistant, and Wandoujia.¹³⁰ The latter two distributed Bilibili, a video-sharing website, which was removed by Chinese authorities in 2018 for hosting explicit and inappropriate content.¹³¹ Baidu Mobile Assistant also had a fake CCleaner app that exposed users to adware.¹³²

¹²⁸ Qian Trial Testimony, 2245:16-2246:1 (“if Google has previously approved an app, generated a token for that app, it doesn’t mean that app is going to be safe forever. ... so in order to mitigate that risk, Google would have to continuously monitor all of the apps that it has previously reviewed and approved, including apps that are within the Google Play Store and outside of the Google Play Store.”).

¹²⁹ Allison Apple Trial Testimony, 1257:18 – 1258:7 (“Q. ... There are many games on Itch.io. I won’t even read the names out loud. A. Okay. Q. But they are both offensive and sexualized. You’re not aware of that? A. Itch.io is an app store that is not the Epic Games Store. We are not distributing -- Itch is distributing Itch.io’s games. Epic is only distributing the app store Itch.io. Q. And Itch.io is now available as an app on the Epic Games Store; correct? A. Correct. Q. And those apps in Itch.io have not gone through any review process whatsoever; correct? A. They are subject to whatever process Itch.io puts in front of their developers.”).

¹³⁰ “Baidu Mobile Assistant,” *Tencent*, <https://sj.qq.com/appdetail/com.baidu.appsearch>, accessed April 10, 2024 (the source was translated from its original language using Google Translate); “Wandoujia,” *Tencent*, <https://sj.qq.com/appdetail/com.wandoujia.phoenix2>, accessed April 10, 2024 (the source was translated from its original language using Google Translate); “Qihoo 360,” *Tencent*, <https://sj.qq.com/appdetail/com.qihoo.appstore>, accessed April 10, 2024 (the source was translated from its original language using Google Translate).

¹³¹ “Bilibili,” *Wandoujia*, <https://www.wandoujia.com/apps/281291>, accessed April 10, 2024, <https://www.wandoujia.com/apps/281291> (the source was translated from its original language using Google Translate); “Bilibili,” *Baidu Mobile Assistant*, <https://shouji.baidu.com/detail/3975824193>, accessed April 10, 2024 (the source was translated from its original language using Google Translate); Yujie, Xue, “Bilibili Removed From Android App Stores for Promoting Incest,” *Sixth Tone*, July 27, 2018, <https://www.sixthtone.com/news/1002698>, accessed April 10, 2024 (“Bilibili, an anime-centered video platform especially popular with millennials, has been removed from several app stores in China after it was criticized for inappropriate content.”).

¹³² “Fake Mobile CCleaner App Sneaked into the China Baidu App Store,” *Decoded Avast.io*, March 4, 2019, <https://decoded.avast.io/threatintel/fake-mobile-ccleaner-app-sneaked-into-the-china-baidu-app-store/>, accessed April 10, 2024 (“fake mobile CCleaner app has been published in the China Baidu App Store ... it’s specified as **Certified Official Version** ... The fake CCleaner app uses the good brand reputation of the

105. Third, requiring Google to distribute third-party app stores would reduce the returns OEMs could earn from preinstallation deals, and this could in turn lead OEMs to increase device prices to users. App stores compete for preinstallation by offering payments to OEMs and by improving the quality of the app stores, which makes them more attractive to OEMs to preinstall. Under Epic’s proposed remedy, third-party app stores would have substantially reduced incentives to offer OEMs monetary or other incentives for preinstallation. If app stores can get installation through Play, they would have less reason to pay OEMs for preinstallation.
106. Fourth, like the catalog access and library porting remedies, requiring Google to distribute third-party app stores would force Google to subsidize its rivals, creating another textbook example of free riding.¹³³ It would be analogous to requiring Walmart to allow kiosks promoting Target within its stores or requiring Airbnb to promote the competing site VRBO on its website. Google has made and continues to make enormous investments in Play, to the benefit of consumers. If those investments will benefit competitors, then Google will have less incentive to make them. Rival app stores will also have less incentive to invest, as they can free ride on distribution through Play rather than competing to secure distribution themselves.
107. The fact that virtually all third-party app stores, including the Samsung Galaxy Store and Amazon Appstore, prohibit the distribution of competing app stores within their stores provides evidence of these potential harms.¹³⁴ Like Play, these app stores are incentivized

genuine CCleaner app 4.11.1 and repackages it to include adware in order to aggressively monetize mainland China users.” Emphasis in original.).

¹³³ See, e.g., Mankiw, N. Gregory, *Principles of Economics*, 6th Ed., South-Western Cengage Learning, 2012, at p. 220 (“free rider[:] a person who receives the benefit of a good but avoids paying for it.”). See also Pindyck, Robert S., and Daniel L. Rubinfeld, *Microeconomics*, 8th Ed., Pearson, 2013, at p. 693 (“free rider[:] Consumer or producer who does not pay for a nonexclusive good in the expectation that others will.”).

¹³⁴ See, e.g., “App Review Guidelines,” *Apple Developer App Review*, April 5, 2024, <https://developer.apple.com/app-store/review/guidelines/>, accessed April 10, 2024 (“Unacceptable[:] [c]reating an interface for displaying third-party apps, extensions, or plug-ins similar to the App Store or as a general-interest collection.”); “Monetization and Advertising Policy” *Amazon Developer Policy Center*, October 16, 2023, <https://developer.amazon.com/docs/policy-center/monetization.html>, accessed April 10, 2024 (“app scenarios that violate the Amazon Appstore Content Policies[:]...[a]n app that is actually a separate app store from the Amazon Appstore.”); “App Distribution Guide,” *Samsung Developer*, <https://developer.samsung.com/galaxy-store/distribution-guide.html>, accessed April 10, 2024 (“Apps must not support the download of any other app by a direct method from inside the app (for example, through an APK.)”); “Aptoide Publisher Distribution Agreement,” *Aptoide*, November, 2020, <https://en.aptoide.com/company/legal?section=distribution>, accessed April 10, 2024 (“You may not use the Aptoide App Store to distribute or make available any App whose primary purpose is to facilitate the distribution of software applications and games for use on Android devices outside of the Aptoide App Store.”); “Review Guidelines,” *Xiaomi Developer*, <https://global.developer.mi.com/document?doc=appReview.reviewGuidelines>, accessed April 10, 2024 (“Apps that have AppStore function (e.g. app search, download or update) will be rejected.”); “App Content,” *Huawei Developers*, August 23, 2023, <https://developer.huawei.com/consumer/en/doc/app/50104-04>, accessed April 10, 2024 (“Your app must not be an app distribution platform, including but not limited to an app market or a game center.”); “App Review

to compete by investing in their stores and protecting the return on such investments by restricting distribution of third-party app stores in their own stores. Among app stores more broadly (not just on mobile), the only one I am aware of that has allowed the distribution of third-party app stores is the Epic Games Store on Macs and PCs that, as highlighted above, has historically distributed apps like itch.io, which contains adult content that the Epic Games Store does not review.¹³⁵

108. Dr. Bernheim acknowledges that “there are good reasons to be cautious about requiring the Google Play Store to carry competing stores in perpetuity.”¹³⁶ I agree. However, these same “reasons” also suggest caution in requiring Play to carry competing stores for a period of six years, which is a long period given the rapidly changing technological landscape. Dr. Bernheim’s only rationale for the six-year term is that it corresponds to roughly two purchase cycles for a typical phone user. This fact does not establish that the harms of the remedy—which Dr. Bernheim acknowledges are large enough to imply caution over a longer time horizon—would not outweigh any alleged benefits over a period of six years.
109. Further, requiring Google to distribute third-party app stores through Play would raise a series of issues that the Court would need to resolve in order to reduce harms to OEMs, carriers, users, developers, and Google itself (that cannot be fully eliminated).
110. First, the economic principles discussed in **Section II** dictate that it would be essential for Google to be able to charge a service fee for any distribution it provides to third-party app stores through Play, just as it currently can charge for distribution of apps and other services. This could include fees on in-app purchases within apps downloaded from these stores and/or fees proportional to the stores’ total revenues. Such fees would not eliminate the incentive to free ride and thus would not eliminate the harms to OEMs, carriers, users, and developers from this remedy, but they would mitigate the harms to some degree. Requiring Google to give away its distribution and discovery services for free would further diminish third-party app stores’ incentives to pay OEMs for preinstallation, magnifying harms to users and ultimately developers, and would further reduce Google’s

Standards,” *OPPO Developer*, <https://developers.oppomobile.com/wiki/index#id=17>, accessed April 10, 2024 (“Prohibited app behaviors[:]. . . The main function of the app is market- oriented (allowed to be downloaded, updated and searched). . . The full page provides a large number of third-party apps for download.”); “Guidelines for App Verification on the Developers Platform,” *Vivo Developers*, <https://developer.vivo.com/doc/detail?id=25>, accessed April 10, 2024 (“Apps are excluded under the following circumstances: . . . The app is a product for distribution: (1) The app itself is a distribution app.”); “Privacy Policy Submission Content and Review Specifications,” *Tencent Open Platform*, <https://wikinew.open.qq.com/#/iwiki/875339652>, accessed April 10, 2024 (the source was translated from its original language using Google Translate).

¹³⁵ “Itch.io,” *Epic Games Store*, <https://store.epicgames.com/en-US/p/itch-io>, accessed April 10, 2024 (“itch.io is an open marketplace for independent digital creators with a focus on independent video games[.]”).

¹³⁶ Bernheim Statement, ¶ 26.

incentives to invest in Play by attracting and retaining developers.

111. Second, Google would need to take measures to try to partially mitigate the risks to security, and to protect the reputation it has invested to build with users. For example, could Google establish policies and standards to ensure that app stores with access to Play are safe and protect users from dangerous, harmful, or inappropriate content? How would it monitor and enforce these policies? In what ways could it charge third-party app stores to defray the costs associated with this monitoring? Evidence Dr. Qian presented at trial showed that the measures proposed by Epic's experts would be imperfect at best, but it would be essential that Google be able to take steps to mitigate these harms.¹³⁷

H. Play Placement (II.D.3)

112. Epic's Proposed Injunction would prohibit Google for a period of six years from entering into or enforcing any existing agreements to mandate or incentivize placement of Play in any specific location on an Android device, including the default home screen ("DHS").¹³⁸
113. This provision is not included in the States' Settlement.
114. Google's MADA agreements already allow OEMs to freely preinstall competing app stores on the DHS, including in positions as or more prominent than Play.¹³⁹ In 2021, the share of Android devices that came preinstalled with at least one other app store besides Play was about two-thirds of all Android devices worldwide (excluding China), and 68 percent of phones in the US.¹⁴⁰ The Samsung Galaxy Store is preinstalled on the DHS

¹³⁷ Qian Trial Testimony, 2244:25-2246:15 ("First, it's possible that after an app has been approved, it's going to turn malicious at a later point in time... there are sophisticated malware tactics that can be employed. One of them, for example, is called Hotfixes... in order to mitigate that risk, Google would have to continuously monitor all of the apps that it has previously reviewed and approved, including apps that are within the Google Play Store and outside of the Google Play... There is one other risk. ... in the new model, you might see a lot of different warnings, one warning for every single app that is not been reviewed by Google. Okay. So under that model, it's possible that a user would become desensitized to those warnings. ... They're just going to click 'Yes' and 'Yes' and 'Yes,' 'Install.'"); 2248:9-2249:2 ("Q. Would decentralized notarization lead to overall lower security than today? ... A. Well, let's imagine if there are 10 reviewing entities. Okay? If one of the reviewing entities decides to approve an app; whereas, all the other nine entities decide to reject that app, what happens? Well, the app is still going to get that notarization token...where the app developer can use to distribute that app and potentially harm users.").

¹³⁸ See Epic's Proposed Injunction, II.D.3.

¹³⁹ Kolotouros Trial Testimony, 1144:20-1145:16 ("Q. And does the MADA prohibit the phone maker from preinstalling another app store on the home screen of the phone? A. No. Q. And, in fact, that's what Samsung does; correct? A. That is correct."). See also Initial Report, ¶¶ 295-296.

¹⁴⁰ Gentzkow Trial Testimony, 2622:8-18 ("if you look at, say, 2021 on the right-hand side, about two-thirds of all Android devices as of that year come with at least one other app store besides Google Play preinstalled right there on the phone. Q. And did you look at similar data for the United States? A. I did, yes. ... So here's the plot for the United States, and you can see in 2021 68 percent of all the phones come with at least one other app store preinstalled.").

of virtually all Samsung devices.¹⁴¹ Additionally, the number of installations that happen outside of Play through other channels, including preinstalled app stores, was about 3.2 billion monthly app installs worldwide (excluding China), and roughly 190 million monthly app installs in the US as of May 2021, representing a 58 and 88 percent increase, respectively, from July 2019.¹⁴² On typical GMS devices, all Google apps and icons together occupy less than half of the space available on the DHS, leaving ample room for other apps and app stores that the OEM might wish to install.¹⁴³

115. Dr. Bernheim acknowledges that the proposed remedy's placement provision "goes beyond prohibiting the conduct the jury deemed illegal at trial."¹⁴⁴ He contends that this provision increases the probability that rival app stores will enjoy competitive success by prohibiting Google from incentivizing placement of Play because "more prominent placement for a rival undermines the Google Play Store's default status."¹⁴⁵
116. Prohibiting Google from offering incentives to have Play installed on the DHS is not

¹⁴¹ Bernheim Trial Testimony, 2507:22-2508:5 ("Q. Because the Samsung Galaxy Store is preloaded on nearly all Samsung smartphones; right? A. That's right. Q. And there are more than 1 billion Samsung devices in the world; right? A. Is it 1 billion? That sounds about right, yeah. Q. So there are more than 1 billion devices in the world with the Samsung Galaxy Store preloaded; right? A. I think that's right."). *See also* Initial Report, ¶ 230 ("Consider users of recent Samsung devices. The Samsung Galaxy Store is preinstalled on almost all of these devices—97 percent as of 2021").

¹⁴² Gentzkow Trial Testimony, 2623:13-25 ("the count of installations of apps that happen outside of Google Play through all of those other channels. So sideloading and other app stores and so on. As of May 2021, each month 3.2 billion apps are installed that way. And in the United States, you can see as of May 2021, 190, roughly, million apps are installed that way -- or app -- I should say app installations happen each month. Q. Now, I see on the slide here you have some percentages and some arrows going upward. Why did you include those? A. So those arrows just refer to how did this change from July 2019 to May 2021; and I think what you see there is it went up by a lot, by 58 percent worldwide, 88 percent in the U.S.").

¹⁴³ For example, the Oppo Find X2 Pro home screen has a total app icon capacity of 24, with two of these spaces being occupied by Google apps, and the Google Search bar taking up four spaces. The Samsung Galaxy S21 home screen has a total app icon capacity of 24, with three of these spaces being occupied by Google apps, and the Google Search bar taking up four spaces. The Vivo Y12s home screen has a total app icon capacity of 35, with three of these spaces being occupied by Google apps, and the Google Search bar taking up five spaces. The Redmi Note 10 home screen has a total app icon capacity of 28, with four of these spaces being occupied by Google apps, and the Google Search bar taking up an additional four spaces. *See* "OPPO Find X2 Pro Review - Going Pro," *Hitech Century*, March 26, 2020, <https://www.hitechcentury.com/oppo-find-x2-pro-review/>, accessed May 2, 2024; "Galaxy S21/Ultra/Plus: Set Home Screen Layout to Home and Apps Screen or Home Screen Only," *YouTube*, March 21, 2021, <https://www.youtube.com/watch?v=9oAHYERrEVM&t=52s>, accessed May 2, 2024; "Vivo Y12s Review: A Surprisingly Good Budget-Friendly Smartphone!," *AdoboTech*, May 23, 2021, <https://www.adobotech.net/2021/05/vivo-y12s-review.html>, accessed May 2, 2024; "Use Twitter on Your Xiaomi Redmi Note 10 5G Android 11.0," *Vodafone*, <https://deviceguides.vodafone.co.uk/xiaomi/redmi-note-10-5g-android-11-0/apps-and-media/use-twitter/>, accessed May 2, 2024; "Install Twitter on Your Xiaomi Redmi Note 10 5G Android 11.0," *Vodafone*, <https://deviceguides.vodafone.co.uk/xiaomi/redmi-note-10-5g-android-11-0/apps-and-media/install-twitter/#>, accessed May 2, 2024.

¹⁴⁴ Bernheim Statement, ¶ 70.

¹⁴⁵ Bernheim Statement, ¶ 71.

necessary to ensure that other app stores can compete to be preinstalled on the DHS. Those app stores currently can and do compete for DHS placement. Rather, the effect of Epic's proposed remedy will be to eliminate Google as a participant in this competition, harming OEMs, users, and, also, developers.

117. Smartphone home screens are valuable real estate controlled by OEMs that play a key role in shaping the user experience.¹⁴⁶ Competition for this real estate bids up its price and thereby allows OEMs to capture more value (whether in the form of direct monetary payments or in-kind payments such as those offered through the MADA). Competition also helps ensure that the app stores that appear on DHSs are the ones that provide the most value to users and developers.
118. Barring a major competitor such as Google from bidding for placement will weaken competition. Microsoft, Amazon, Epic, and other app store competitors would be free to offer OEMs attractive deals to place their app stores on DHSs exclusively. Google would be prevented from responding by matching or exceeding these deals for its own app store. Moreover, third-party app stores would be free to offer OEMs incentives *not* to install Play on DHSs. Google would be prevented from responding to such offers with competitive bids of its own.
119. Diminished competition for DHS space would harm OEMs. The valuable real estate they control would be worth substantially less with Google excluded as a bidder. Removing a strong bidder (Google) from the competition for DHS real estate would mean that other bidders would face less competition and therefore bid less.¹⁴⁷ This would decrease the overall value of the DHS real estate that OEMs can capture, just as (all things equal) the more bidders there are among potential buyers for a house, the higher the selling price is likely to be.
120. Diminished competition for DHS space would also harm users. Competitive bidding makes it more likely that DHS space is allocated to the apps that users value the most. When that competition is shut down or undermined, it is more likely that devices will ship without the apps that users value most being preinstalled and easily accessible. Moreover, evidence shows that many users benefit when Android offers a consistent out-of-the-box

¹⁴⁶ Eric Christensen Trial Testimony by Video Deposition, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 29, 2024, 52:4-53:5 (“Q. And would you consider the default home screen to be valuable real estate on a smartphone?...A. Yes...Q. Well, so why do you view the default home screen to be valuable real estate on a smartphone?...A. As I said, it’s the first screen that the user sees and it’s a common screen is that the user goes back to. So as the user customizes that home screen to be able to have its most, have the user’s most commonly used apps or widgets or other types of shortcuts. It’s the screen that the user sees most often.”).

¹⁴⁷ Bulow, Jeremy, and Paul Klemperer, “Auctions Versus Negotiations,” *American Economic Review*, Vol. 86, No. 1, 1996, pp. 180-194, at p. 180 (“No amount of bargaining power is as valuable to the seller as attracting one extra bona fide bidder.”).

experience.¹⁴⁸ If Google is excluded from competing, the market is less likely to deliver that consistency even in cases where it maximizes user welfare. Finally, as mentioned in **Section III.B** above, changes that reduce the value that OEMs can capture through competition for their real estate effectively increase the marginal cost of their devices, and this will tend to be passed down to users in the form of higher device prices, diminishing Android’s ability to compete with Apple.

121. Finally, diminished competition would harm developers as well. Developers benefit when the Android ecosystem has more users and more high-quality, low-priced devices. The proposed remedy has the potential to reduce the number of users, raise device prices, and weaken the overall Android ecosystem.

IV. EPIC’S PROPOSED REMEDIES IN THE ANDROID IN-APP PAYMENT SOLUTIONS MARKET (III)

A. Links, Calls to Action, and Communication with Users (III.A.1-2, III.B.1)

122. Under Epic’s Proposed Injunction, Google could not restrict a developer’s in-app communications about out-of-app purchasing options (including links taking the user outside an app to make a purchase), nor limit how they display any potential price differences “for in-app purchases using GPB and any Alternative In-App Payment Solution.”¹⁴⁹ In addition, Google would be unable to “restrict, prohibit, impede, disincentivize or deter Developers from informing Users about out-of-app purchasing

¹⁴⁸ See, e.g., Kolotouros Trial Testimony, 1136:1-6 (“If users are trying an Android phone after having been on an iPhone for some time, they might be trying it; but if they don’t like the experience out of the box or they don’t see the services or see features or functionality on that phone out of the box, they’re much more likely to go back to an iPhone in my opinion.”). See also Göktürk, Mehmet, and Görkem Çetin, “Out of Box Experience Issues of Free and Open Source Software,” *12th International Conference, Human-Computer Interaction International 2007*, 2007, pp. 774-783, at p. 775 (“It has been demonstrated that OOB [Out-Of-Box Experience] has a significant impact on product adoption ... studies indicate that OOB design has utmost importance for product adoption and use of advanced features such as mobile data services, calendars, message boxes and so on.”); Tricia, Aria, “11 Reasons Why You Should Switch From Android to iPhone,” *MakeUseOf*, September 6, 2023, <https://www.makeuseof.com/why-you-should-switch-from-android-to-iphone/>, accessed April 10, 2024 (“You’ll need some technical proficiency and customization experience to utilize Android’s platform, which not all smartphone users have. On the contrary, iOS devices have a straightforward, user-friendly interface. They come with various pre-installed, out-of-the-box features, so you can start using them right from the get-go. You wouldn’t need much time to learn an iOS interface.”); Eadicicco, Lisa, “Samsung and Google Are Teaming Up to Escalate Their War on the iPhone With the Galaxy S20,” *Business Insider*, February 21, 2020, <https://www.businessinsider.com/samsung-galaxy-s20-google-duo-compete-with-apple-iphone-2020-2>, accessed April 10, 2024 (“Samsung’s new Galaxy S20 comes with Google’s video-chat app, Duo, baked directly into the phone’s calling app. It’s a subtle addition, but one that gives both Samsung and Google important advantages in competing against the iPhone. ... Bringing its services to third-party phone makers like Samsung could also help Google make its Android software feel more consistent like the iPhone.”).

¹⁴⁹ See Epic’s Proposed Injunction, III.A.1, III.B.1.

options or from offering different prices for in-app purchases using GPB and using out-of-app payment options.”¹⁵⁰

123. Epic’s Proposed Injunction also includes terms related to the APIs used to invoke out-of-app payment solutions and the fees that may be charged for those solutions. I understand that these terms are being addressed by Dr. Leonard in a separate statement.
124. The States’ Settlement already requires Google to allow communication with users about payment options, pricing, and promotions, and to allow use of web-based billing solutions. Under the States’ Settlement, Google would be required to permit developers to “(a) inform Users within the app about different pricing or promotions that may be available if the User uses the developer’s alternative in-app billing system, and; (b) allow Users who choose the developer’s alternative in-app billing system to complete transactions using the developer’s existing web-based billing solution in an embedded webview within its app.”¹⁵¹ Google must also continue to allow developers to use the contact information obtained outside the app or in-app to communicate with users out-of-app, including to promote alternatives to Play’s billing system.¹⁵² Google is not required to allow developers to include links taking the user outside an app distributed through Play to make a purchase.¹⁵³
125. The States’ Settlement also requires Google to permit developers to disclose to users the fees associated with Play or its billing system, and to provide users with information on purchasing options outside the app and within the app.¹⁵⁴ Google also agreed to permit developers who allow users to purchase digital goods and services from within the app to provide users with certain “calls to action,” limited to “accurate information within the app that informs Users about purchasing options outside the app, including price information.”¹⁵⁵
126. Epic’s Proposed Injunction goes further than the States’ Settlement in prohibiting Google from setting any guidelines or guardrails whatsoever for developers’ communication with users about purchase options. This could harm users by preventing Google from establishing basic security protections that would limit malware, privacy violations, and user confusion, including prohibiting inaccurate or deceptive communication about billing or prices, requiring that users be informed that a link is taking them out of the app to the internet, or enforcing security and privacy standards for billing pages linked to by apps. It

¹⁵⁰ Epic’s Proposed Injunction, III.A.2.

¹⁵¹ States’ Settlement, § 6.11.1.

¹⁵² See States’ Settlement, § 6.11.2.

¹⁵³ See States’ Settlement, § 6.11.4.

¹⁵⁴ See States’ Settlement, § 6.11.

¹⁵⁵ States’ Settlement, § 6.11.4.

could also harm users by preventing Google from enforcing user experience guidelines that ensure a consistent and high-quality experience across apps—for example, requiring that buttons linking to out-of-app payment options be presented in a consistent format.

127. Epic’s Proposed Injunction also goes much further than the States’ Settlement in prohibiting Google from even “disincentivizing” developers from informing users about out-of-app purchasing options or from offering different prices for those options. Like other language in Epic’s Proposed Injunction related to incentives, these terms create uncertainty about whether Epic’s Proposed Injunction prohibits a wide range of conduct that goes far beyond the challenged conduct considered at trial, including straightforward competition on the merits. Any action Google would take to increase the value of GPB, including cutting its price or improving its quality, would reduce developers’ incentive to inform users about non-GPB payment methods (since it would reduce the number of users who prefer non-GPB payment methods to GPB).
128. To take a concrete example, suppose that Google were to introduce a new feature in GPB allowing developers to create customized checkout pages including their own corporate branding. Dr. Tadelis testified at trial that the lack of this kind of custom checkout pages in GPB is a key reason why developers currently have a strong incentive to direct users to alternative billing systems.¹⁵⁶ Google’s introduction of custom checkout pages would therefore “disincentivize ... Developers from informing Users about out-of-app purchasing options.”¹⁵⁷
129. Dr. Tadelis fails to address the vagueness and broad scope of these provisions. He claims that they “do not restrict Google from competing on the merits,”¹⁵⁸ but he does not discuss how prohibited disincentives are to be distinguished from legitimate competition.
130. The fact that other platforms have limits on billing communications that are often more restrictive than the terms Google agreed to in the States’ Settlement is economic evidence that the States’ Settlement strikes a reasonable balance between competition and

¹⁵⁶ Trial Testimony of Steven Tadelis, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, November 28, 2023 (“Tadelis Trial Testimony”), 2544:25-2545: 12 (“Q. So turning to innovation and quality...The first one you say is ‘No customizable user interface.’ What do you mean by that? A. So imagine that you’re a developer with an app and you have a certain aesthetic to it, you know, a certain set of colors, et cetera, and you want everything within your app to have that type of aesthetic. Well, Google Play Billing has this one-size-fits-all nature. They don’t allow you to customize what it’s going to look like. Other payment solution providers do.”); 2547:5-14 (“Q. Now, are these the only features that Google Play Billing lacks? A. No. There were many others. So, for example, in some of the correspondence between YouTube and the Play folks within Google, there’s a mention of, if I recall, dozens of features that YouTube wanted and Google Play Billing didn’t offer. There are historical examples of developers like meditation app Calm that wanted the ability to use one-day subscriptions to give users the ability to try something without having to commit.”).

¹⁵⁷ Epic’s Proposed Injunction, III.A.2.

¹⁵⁸ Tadelis Statement, ¶ 18.

preventing mass circumvention. For example, Walmart on its online marketplace bans “any attempt” to circumvent its “sales process or divert customers” including via the use of advertisements and marketing offers in customer communication, as well as the inclusion of hyperlinks, URLs and third-party websites in communications visible to customers.¹⁵⁹ eBay also prevents sellers from linking or promoting sites, items or catalogs that can be used to order items outside of the eBay website.¹⁶⁰ Amazon prohibits its marketplace sellers from providing links or messages that prompt users to visit external websites.¹⁶¹ Oppo Software Store prohibits links in gaming apps that lead to “competing product platforms and third-party websites.”¹⁶²

131. Dr. Tadelis addressed some of these platforms’ policies at trial, agreeing for example that it was not anticompetitive for Amazon and eBay to prevent sellers from linking out to an external website for payment.¹⁶³ The widespread use of these kinds of limits on other platforms highlights the procompetitive benefits they can provide.

¹⁵⁹ “Marketplace Seller Code of Conduct,” *Walmart Seller Help*, March 15, 2024, https://sellerhelp.walmart.com/s/guide?language=en_US&article=000007968, accessed April 11, 2024 (“Any attempt to circumvent the Walmart sales process or divert customers is prohibited. Examples of activities to divert or redirect customers include: ... Use of advertisements, marketing offers and promotional materials in customer communication or order fulfillment...Including hyperlinks, URLs, third party website or selling platform information in item content, account information or other communications visible to customers.”).

¹⁶⁰ “eBay Fee Avoidance Policy,” *eBay Customer Service*, <https://www.ebay.com/help/policies/selling-policies/selling-practices-policy/avoiding-ebay-fees-policy?id=4354>, accessed April 10, 2024 (“Sellers are prohibited from activities that avoid eBay fees, intentionally or not. This includes: ... Linking or promoting sites, items, or catalogs that can be used to order items outside of eBay.”).

¹⁶¹ “Selling Policies and Seller Code of Conduct,” *Amazon Seller Central*, <https://sellercentral.amazon.com/help/hub/reference/external/G1801?locale=en-US>, accessed April 10, 2024 (“You may not attempt to circumvent the Amazon sales process or divert Amazon customers to another website. This means that you may not provide links or messages that prompt users to visit any external website or complete a transaction elsewhere.”).

¹⁶² “OPPO Cooperative Game Penalty Specifications,” *OPPO Developer Service Center*, <https://open.oppomobile.com/new/developmentDoc/info?id=12278>, accessed April 10, 2024 (the source was translated from its original language using Google Translate) (“[V]iolations[:] Guide users in the game to download games and applications through unofficial channels... Links inside and outside the game jump or download to competing product platforms and third-party websites... Unauthorized competing product information (pages, logos, etc.) appears in the game, inducing downloads of unofficial channel games and applications.”).

¹⁶³ Tadelis Trial Testimony 2601:5-2602:12 (“Q. But when you worked for eBay, eBay had an antisteering policy; right? A. That is correct. Q. And eBay had an antisteering policy because if it didn’t have such a policy, users of the platform could take advantage of the parts of the platform that were free or low cost and then they could remove the transaction from the platform and deprive eBay of the income it wanted to earn from its services; right? A. That is correct. Q. And that antisteering policy, that’s what allowed eBay to actually pay for the platform; right? A. And make a profit, yes. Q. Nothing wrong with eBay doing that; right? A. That is correct. Q. And, again, when you worked at Amazon, you didn’t think there was anything anticompetitive about what Amazon was doing either; right? A. That is correct. Q. And Amazon doesn’t just sell its own product. It’s also a platform that brings buyers and sellers together; right? A. Yes. More than 50 percent now, in fact. Q. And they also have an antisteering policy; right? A. Yes, that’s correct. Q. For

B. Developer-Only Billing (III.B.1, III.C)

132. Epic’s Proposed Injunction would prohibit Google from entering into agreements that require the implementation of GPB in any Android app.¹⁶⁴ Developers would be able to include only an alternative in-app billing system, without GPB—what has been referred to as Developer Only Billing (“DOB”). Epic’s proposal also prohibits Google from using terms that “restrict, prohibit, impede, disincentivize or deter” developers from “integrating any Alternative In-App Payment Solution” and from “offering different prices for in-app purchases using GPB and any Alternative In-App Payment Solution and/or making that price difference visible to users.”¹⁶⁵
133. Furthermore, under Epic’s Proposed Injunction, Google could not reject for distribution, disadvantage, or retaliate against any Android app based on the actual or intended use of an “Alternative In-App Payment Solution.”¹⁶⁶ Google could not enter into any agreements or engage in other conduct that restricts, prohibits, or impedes access to the Android platform, Android functionality/APIs, or Google products/services to Android apps or developers who opt to integrate an “Alternative In-App Payment Solution.”¹⁶⁷
134. As noted above, Epic’s Proposed Injunction also includes terms related to the APIs used to invoke alternative in-app payment solutions and the fees that may be charged for those solutions. I understand that these terms are being addressed by Dr. Leonard in a separate statement.
135. Under the States’ Settlement, developers may add an alternative in-app billing system for their users but must also continue to give users the choice of using GPB.¹⁶⁸
136. Prohibiting Google from requiring that users be offered the choice to use GPB would harm users by undermining their ability to choose a unified billing system across purchases from multiple developers. GPB currently offers users a single payment solution that is available across the full range of Android apps in Play that offer digital content inside the app. Users obtain a substantial benefit from knowing that they have the *option* to use a single billing

example, on Amazon a seller can’t provide a link or a message that prompts a user to go to an external website to complete a transaction; right? A. That is correct. Q. And obviously they have to do that because if a user could take advantage of the platform to connect the buyer and the seller but then take that transaction another place, eBay won’t get money for the services it’s providing; right? A. Yes.”).

¹⁶⁴ See Epic’s Proposed Injunction, III.B.

¹⁶⁵ Epic’s Proposed Injunction, III.B.1.

¹⁶⁶ See Epic’s Proposed Injunction, III.C.1, III.C.2.

¹⁶⁷ See Epic’s Proposed Injunction, III.C.3, III.C.4.

¹⁶⁸ “Enrolling in the User Choice Billing Pilot,” *Play Console Help*, <https://support.google.com/googleplay/android-developer/answer/12570971>, accessed April 10, 2024 (“This pilot is designed to test offering an alternative billing option next to Google Play’s billing system”).

system for all of their Android digital purchases. Choosing to do this gives users many benefits: only having to enter their payment information once, a single place to look to monitor all of their subscriptions and purchase history, the ability to exercise parental control over purchases made by minors, and convenient and unified processing of returns, among others.¹⁶⁹

137. The fact that other multi-sided platforms often require use of their own billing systems for transactions provides strong economic evidence of the efficiency benefits of a unified billing option. For example, Airbnb does not allow hosts to collect payments directly from guests; they require hosts to use Airbnb's billing system. Sellers on Amazon and eBay, restaurants on Grubhub and Uber Eats, dog walkers on rover.com, and drivers on Uber and Lyft, to take just a few examples, are all required to use the platform's billing services. The same is also true of virtually all smart device and PC app platforms. **Appendix A** provides a partial list of platforms with their respective billing system policies.
138. Preventing Google from ensuring that a billing system is available across all apps in Play would harm users and developers because developers likely could not converge on such a universal billing system on their own. Doing so is a collective action problem.¹⁷⁰ individual developers may have private incentives to use a different billing system, and pursuing those incentives imposes costs on other developers, users, OEMs, and carriers that would benefit from the option of a common billing system. If Google cannot offset those costs by offering incentives to coordinate on common billing, many platform

¹⁶⁹ Trial Testimony of Mrinalini Loew, *In re Google Play Store Antitrust Litigation*, 3:21-md-02981-JD, December 1, 2023 ("Loew Trial Testimony"), 3122:2-20 ("Q. Does Google Play Billing do anything to make purchasing digital items in an app more streamlined for the users of the app? A. Yes ... we have a single purchase flow that users become really familiar with. It's branded with Google, which users trust a lot. So when users go through and do in-app purchases they see the same cart every time, they can use the same form of payment every time, and they're just really comfortable with the Google branding [*sic*] for security and privacy."); 3123:22-3124:11 ("Q. Focusing on content, how do parental controls work related to content? A. Sure. If a parent sets up an account for their child then they can kind of control the content...Q. How about budgeting? Does Google Play provide budgeting controls for parents? A. We provide purchase controls, which means a parent can decide if they want their children to purchase or not on Google Play Billing; and if they do, they can have access to a form of payment or they can set up Ask to Pay for their kids so if their kids want to buy something, it sends a notification to the parent every time and they can approve it or not."); 3146:18-3147:10 ("We really believe by having a streamlined Google-led purchase flow, we're keeping all the users' information safe. It allows users to kind of safely try unknown apps that they're not -- you know, that they haven't heard about that aren't as big as Netflix. And that way if a user has a bad experience with a little bit of a lesser-known app, we can help intervene and make sure that they get all set. Q. And what risk is -- what risk to user trust is Google Play trying to mitigate by making developers use Google Play Billing in these circumstances? A. Yeah, I think the big thing for user trust is just like making sure the whole ecosystem can be successful. We're always worried about a bad-apple scenario where a user has really one bad experience with a digital app, and then they don't want to try anything else in the store. We want the store to feel really safe so that all apps in our store have a really good chance at succeeding.").

¹⁷⁰ Rom, Mark C., *et al.*, *Introduction to Political Science*, OpenStax, 2022, at p. 187 ("Collective action problems exist when individuals, acting rationally in pursuit of their self-interest, have incentives to make decisions that are harmful to the interests of others as well as, ultimately, the individual themselves.").

participants will lose a choice that they value.

139. Offering choice allows users that have a preference for GPB to choose it across all of their Play-downloaded apps. Users may favor GPB because their preferred form of payment is not available on the alternative in-app billing system, because they can set parental controls on purchases,¹⁷¹ because they can earn Google Play Points,¹⁷² because their payment information is already stored,¹⁷³ or for other reasons. The alternative payment solution may not enable transactions in certain currencies / countries in which GPB offers services.¹⁷⁴ Enabling users to continue to make purchases on their Play-downloaded apps through GPB—because they prefer GPB or because GPB is available when the developer’s chosen alternative is not—increases the likelihood that they will make purchases, which benefits users and developers and increases the overall value of Play and the Android platform.
140. DOB would also open a channel for developers to evade paying Google’s service fee. Under UCB, if a developer fails to pay an invoice for any service fee on transactions processed through an alternative billing system, Google is potentially able to collect those fees through payments made using GPB. Google would not have the same recourse if a developer does not offer GPB as an option. Allowing developers to circumvent Google’s service fee reduces Google’s incentive to invest in continuing to support and improve Play and Android, and those investments and support benefit users and developers.
141. Dr. Tadelis focuses on the impact of DOB on developers, but fails to consider the impact

¹⁷¹ In her trial testimony, Mrinalini Loew, head of product management for Play commerce up until 2023, explained that Google “provide[s] purchase controls, which means a parent can decide if they want their children to purchase or not on Google Play Billing; and if they do, they can have access to a form of payment or they can set up Ask to Pay for their kids so if their kids want to buy something, it sends a notification to the parent every time and they can approve it or not.” Loew Trial Testimony, 3124:4-11. *See also* “How to Set Up Parental Controls on Google Play,” *Google Play Help*, <https://support.google.com/googleplay/answer/1075738?hl=en>, accessed April 10, 2022 (“When you put parental controls on an Android device, you can restrict what content can be downloaded or purchased from Google Play on that device based on maturity level.”).

¹⁷² Users who enroll in the Google Play Points program earn Play Points on dollars spent and may redeem these points to “to unlock special items in apps and games or exchange them for Google Play Credit.” “Earn and Track your Google Play Points,” *Google Play Help*, <https://support.google.com/googleplay/answer/9077192>, accessed April 10, 2024.

¹⁷³ Users only need to provide financial information once and can manage their sensitive financial information in one place rather than separately across a series of differentiated billing systems. “How to Add, Remove, or Edit Your Google Play Payment Method,” *Google Play Help*, https://support.google.com/googleplay/answer/4646404?hl=en&ref_topic=3365267, accessed April 10, 2024.

¹⁷⁴ When using Play’s billing system, users are assured of accurate local pricing. “Set Up Your App’s Prices,” *Play Console Help*, <https://support.google.com/googleplay/android-developer/answer/6334373?hl=en>, accessed April 11, 2024 (“We use the price you enter as the base for calculating market-specific prices. We’ll convert your price to the local currency, add tax in select countries, and apply locally relevant pricing patterns and valid exchange rates for the date on which you set the price for your app.”).

on users and other Android participants.¹⁷⁵ Certain developers may prefer to enact their own alternative billing system or use a third-parties system, but their preferences must be considered alongside the impacts on the broader platform.

142. Epic’s Proposed Injunction also goes well beyond the States’ Settlement in prohibiting Google from even “disincentivizing” developers from integrating alternative in-app purchasing options or from offering different prices for those purchasing options. Like the incentive language discussing in **Section IV.A**, these terms create uncertainty about whether Epic’s Proposed Injunction prohibits a wide range of conduct that goes far beyond the challenged conduct considered at trial, including straightforward competition on the merits. Any action Google would take to increase the value of GPB, including cutting its price or improving its quality, would tend to reduce developers’ incentive to integrate non-GPB billing solutions into their apps. To continue with the example discussed in **Section IV.A**, if Google were to introduce a new feature in GPB allowing developers to create customized checkout pages including their own corporate branding—a feature Dr. Tadelis has testified currently provides developers a strong incentive to integrate alternative in-app payment solutions—this would diminish the need for an alternative in-app purchasing option and constitute “disincentiviz[ing] ... Developers from integrating [an] Alternative In-App Payment Solution.”¹⁷⁶ Likewise, Google’s current requirement that alternative billing systems comply with the Payment Card Industry Data Security Standard (“PCI DSS”) to protect cardholder data could be prohibited under Epic’s Proposed Injunction as a “disincentive” to developers from offering an alternative billing system.¹⁷⁷
143. Dr. Tadelis fails to address the vagueness and broad scope of these provisions. He claims that they “do not restrict Google from competing on the merits,”¹⁷⁸ but he does not discuss how prohibited disincentives are to be distinguished from legitimate competition.

¹⁷⁵ Tadelis Statement, ¶ 9.

¹⁷⁶ Epic’s Proposed Injunction, III.B.1; Tadelis Trial Testimony, 2544:25-2545:12, 2547:5-14.

¹⁷⁷ “Enrolling in the User Choice Billing Pilot,” *Play Console Help*, https://support.google.com/googleplay/android-developer/answer/12570971?hl=en&ref_topic=3452890&sjid=962272976662676777-NC, accessed May 1, 2024 (“Enrolling in the user choice billing pilot... Requirements... 3. Comply with the Payment Card Industry Data Security Standard (PCI-DSS) (if handling credit and debit card data).”); “PCI DSS v4.0 Quick Reference Guide,” *PCI Security Standards Counsel*, https://docs-prv.pcisecuritystandards.org/PCI%20DSS/Supporting%20Document/PCI_DSS-QRG-v4_0.pdf, accessed May 1, 2024, at p. 8 (“PCI DSS provides a baseline of technical and operational requirements designed to protect payment account data.”).

¹⁷⁸ Tadelis Statement, ¶ 24.

V. GOOGLE SHOULD BE ALLOWED TO COMPETE ON THE MERITS

144. Contrary to what Dr. Bernheim and Dr. Tadelis claim in their statements,¹⁷⁹ Epic's Proposed Injunction would substantially and unnecessarily impede Google's ability to compete on the merits. The proposed remedies go far beyond eliminating the conduct that the jury found to be anticompetitive, imposing barriers that would prohibit prices and other market outcomes from being determined by competitive market forces and enabling free riding that would undermine competition and innovation. This would harm users, developers, OEMs, carriers, and other participants in the Android ecosystem, likely to the benefit of Apple.



Matthew Gentzkow, Ph.D.

Date: May 2, 2024

¹⁷⁹ See Bernheim Statement, Section III.E; Tadelis Statement, Section II.D.

Appendix A
Selected App Stores and Digital Platforms and Their Respective Payment Policies
(as of April 2024)

App Store or Digital Platform	Payment Policy
Apple App Store	“If you want to unlock features or functionality within your app, (by way of example: subscriptions, in-game currencies, game levels, access to premium content, or unlocking a full version), you must use in-app purchase. Apps may not use their own mechanisms to unlock content or functionality, such as license keys, augmented reality markers, QR codes, cryptocurrencies and cryptocurrency wallets, etc.” ^[1]
Amazon Appstore	“[I]f you make digital content available for purchase that can be used in your app, you must use our In-App Purchasing API or other methods we make available to you. If you make such content available for purchase, you may not enable account creation within your app unless you use our IAP API. You also may not direct customers to use other methods of paying for such content.”
Aptoide	“[T]he price of the Apps and/or the In-App Products will only be set out in AppCoins,” with AppCoins being “[a] specific cryptocurrency created and issued by Aptoide.” For sellers, “[a]ll payments will be made to you in AppCoins.”
Oppo Software Store	It is a “violation” to “[u]se unofficial payment channels. Especially if the payment is upgraded to an unofficial payment channel through in-game self-upgrade, etc.” ^[2]
Microsoft Store	“For: i) all Games and In-App Products in Games (including subscriptions) available on any device and, ii) all Apps (and In-App Products made available in such Apps) made available on Xbox consoles, you must use Microsoft’s commerce engine for the purchase of such Game or App, or any In-App Products that are or can be consumed or used within such Game or App.” ^[3]
Roku	“Paid Applications must (a) use Roku Pay and not any alternate billing service, (b) refrain from directing end users to use any alternative billing service(s), and (c) refrain from otherwise encouraging end users to purchase access to your Content other than through the Platform.”
Steam	“For any in-game purchases, you’ll need to use the microtransaction API so Steam customers can only make purchases from the Steam Wallet.”

Amazon	“You may not attempt to circumvent the Amazon sales process or divert Amazon customers to another website. This means that you may not provide links or messages that prompt users to visit any external website or complete a transaction elsewhere.”
eBay	“Sellers are prohibited from activities that avoid eBay fees, intentionally or not. This includes: Making offers to buy or sell outside of eBay[;] Linking or promoting sites, items, or catalogs that can be used to order items outside of eBay.”
Etsy	“Any action by a seller to avoid paying a fee is considered fee avoidance and is strictly prohibited by Etsy. This includes, for example, encouraging buyers to purchase an item in your Etsy shop through another venue. A transaction initiated on Etsy may not be completed off of Etsy.”
Walmart Marketplace	“Any attempt to circumvent the Walmart sales process or divert customers is prohibited. Examples of activities to divert or redirect customers include: Use of advertisements, marketing offers, and promotional materials in customer communication or order fulfillment[;] Including hyperlinks, URLs, third party website or selling platform information in item content, account information, or other communications visible to customers.”
Rover	App users agree “Not to use the Rover Service to arrange for the provision and purchase of services with another user, then complete transactions for those services outside of the Rover Service,” and “Not to use the Rover Service for purposes of competing with Rover or to promote other products or services.”
TaskRabbit	App users “will only utilize the third-party PSP (as defined in the Fees, Payments and Cancellation Supplemental Terms) to make or receive payment for Tasks.”
StubHub	“You are not allowed to use the Site or services to: contact other users[;] ask other users to contact you[;] buy, sell, or deliver tickets outside of our Site and services.”
Grubhub	App users agree “not to advertise to, or solicit, any user, Merchant, or other business to buy or sell any products or services, or use any information obtained from the Platform or the Services in order to contact, solicit, or advertise or sell to any user, Merchant, or other business, in each case, unless specifically authorized in writing by Grubhub.”

Uber/Uber Eats	App users must “never solicit or accept payment outside the Uber Marketplace Platform. Riders and Uber Eats users should not pay for trips or deliveries in cash, and riders should not request trips from drivers outside of the Uber Marketplace Platform.”
Lyft	“You will not, while providing the Rideshare Services, operate as a public or common carrier or taxi service, accept street hails, charge for rides (except as expressly provided in this Agreement), demand that a rider pay in cash, or use a credit card reader, such as a Square Reader, to accept payment[.]”
VRBO/HomeAway	“Members agree not to encourage or advise a traveler to avoid or circumvent the service fee charged by HomeAway.”
Airbnb	Airbnb app users or hosts must “not request, make, or accept a booking or any payment outside of the Airbnb Platform to avoid paying fees, taxes or for any other reason.”

Notes:

[1] Apple provides developers with the ability to “apply for entitlements to provide a link in their app to a website the developer owns or maintains responsibility for in order to purchase digital content or services.”

[2] Google Translate was used to translate these policies into English.

[3] Microsoft notes that developers of certain non-game apps on devices other than Xbox consoles “may make use of a secure third-party commerce engine to support the purchase of any In-App Product(s).”

Sources: “App Store Review Guidelines,” *Apple*, April 5, 2024, <https://developer.apple.com/app-store/review/guidelines/>, accessed May 1, 2024; “Monetization and Advertising Policy,” *Amazon Appstore*, October 16, 2023, <https://developer.amazon.com/docs/policy-center/monetization.html>, accessed May 1, 2024; “Aptoide Publisher Distribution Agreement,” *Aptoide*, November 2020, <https://en.aptoide.com/company/legal?section=distribution>, accessed May 1, 2024; “OPPO Cooperative Game Penalty Specifications,” *OPPO*, <https://open.oppomobile.com/new/developmentDoc/info?id=12278>, accessed May 1, 2024; “App Developer Agreement,” *Microsoft Store*, November 30, 2023, <https://cdn-dynmedia-1.microsoft.com/is/content/microsoftcorp/microsoft/final/en-us/store/legal-and-policy-documents/ada/MS-Store-ADA-v8.9-FINAL-EN.pdf>, accessed May 1, 2024; “Roku Distribution Agreement,” *Roku*, November 8, 2023, <https://docs.roku.com/published/developerdistribution/en/us>, accessed May 1, 2024; “Microtransactions (In-Game Purchases),” *Steamworks*, <https://partner.steamgames.com/doc/features/microtransactions>, accessed May 1, 2024; “Selling Policies and Seller Code of Conduct,” *Amazon Seller Central*, https://sellercentral.amazon.com/gp/help/external/G1801?language=en_US, accessed May 1, 2024; “eBay Fee Avoidance Policy,” *eBay*, <https://www.ebay.com/help/policies/selling-policies/selling-practices-policy/avoiding-ebay-fees-policy?id=4354>, accessed May 1, 2024; “Fees & Payments Policy,” *Etsy*, April 9, 2024, <https://www.etsy.com/legal/fees>, accessed May 1, 2025; “Marketplace Seller Code of Conduct,” *Walmart Seller Help*, March 15, 2024, <https://sellerhelp.walmart.com/s/guide?article=000007968>, accessed May 1, 2024; “Terms of Service,” *Rover*, June 13, 2023, <https://www.rover.com/terms/tos/>, accessed May 1, 2024; “TaskRabbit Global Terms of Service,” *TaskRabbit*, February 21, 2024, <https://www.taskrabbit.com/terms>, accessed May 1, 2024; “Seller Policies,” *StubHub*, <https://www.stubhub.com/legal/?section=sp>, accessed May 1, 2024; “Terms Of Use,” *Grubhub*, December 14, 2021, <https://www.grubhub.com/legal/terms-of-use>, accessed May 1, 2024; “Uber Community Guidelines,” *Uber*, April 22, 2024, <https://www.uber.com/legal/en/document/?country=united-states&lang=en&name=general-community-guidelines>, accessed May 1, 2024; “Lyft Terms of Service,” *Lyft*, January 22, 2024, <https://www.lyft.com/terms>, accessed May 1, 2024; “Terms and Conditions,” *Vrbo*, July 6, 2023, <https://www.vrbo.com/legal/terms-and-conditions>, accessed May 1, 2024; “Terms of Service,” *Airbnb*, January 25, 2024, <https://www.airbnb.com/help/article/2908/terms-of-service>, accessed May 1, 2024.